Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 q 19
4. Edition
En

PES 6 P 110 A 720 LS 375 RQ 250/1100PA 658

Komb.-Nr. 0 402 046 251 = MAN-Nr. 2-7377
0 402 046 253 = MAN-Nr. 2-7379
0 402 046 297 = MAN-Nr. 2-7499

supersedes 1.85
company: MAN
engine: D 2566 MT (F) (1)
206 kW (280 PS)
MAN-Nr. 2-7499
D 2566 MTF-Trope.
196 kW/2200 min
(2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95-3,15) mm (from BDC) cyl. 6; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,4+0,1	14,7-14,9	0,4(0,75)			
250	7,3-7,5	1,1-1,6	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	11,4	1145-1160	250	7,4	100	min.8,9	1100	12,4-12,5
VH = max. 46°				4,0	1190-1220			250	7,3-7,5	700	13,1-13,2
				1350	0-1,0			355-395	= 2,0	940	12,9-13,1
										1015	12,5-12,8

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA	0,7 bar	-	LDA	0,2 bar	100	225,0-245,0
1100	147,0-149,0		500	123,0-127,0		(221,0-249,0)
	(144,0-152,0)			(120,0-130,0)		
LDA	0,7 bar		LDA	0 bar		
700	157,0-161,0		500	110,0-113,0		
	(154,0-164,0)			(108,0-116,0)		

Checking values in brackets

9.85

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B Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600 VH =	19,2-20,8 max. 46°	600	20,0	11,4 4,0 1350	1145-1160 1190-1220 0-1,0	250	7,4	100 250 355-395	min. 8,9 7,3 - 7,5 = 2,0	1100 700 870 970	12,4-12,5 13,3-13,4 13,0-13,2 12,5-12,8

Torque-control travel on flyweight assembly dimension a: 0,2 mm

Speed regulation At: 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40° C (104 F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	Control rod travel cm³/1000 strokes / mm
1	2	3	4	5	6	7
(2) LDA 1100 LDA 700	 0,7 bar 139,0-141,0 (138,0-142,0) 0,7 bar 150,0-154,0 (147,0-157,0)	-	LDA 500 LDA 500	0,2 bar 115,0-119,0 (112,0-122,0) 0 bar 103,0-107,0 (101,0-111,0)	100	215,0-235,0 (211,0-239,0)

Checking values in brackets

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 P..LS 375 + RQ..PA 335 DR	0,70	 0 0,20 0,32	 13,1 - 13,2 11,3 - 11,4 11,7 - 12,1 12,6 - 12,7

Notes

(1) when n = rev/min and gauge pressure bar (= maximum full-load control rod travel)

En

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A2

Test Specifications Fuel Injection Pumps ② and Governors

PES6P 110 A 720 LS 375 RQ 300/1100 PA 658-10

Komb.-Nr. 0 402 046 309

MAN-Nr. 2-7549

supersedes 7.84

company: MAN

engine: D2566 MLUM/US 191 kW/2200 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) RW = 9,0-12,0 mm, Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm^3/100 strokes 3	Difference cm^3/100 strokes 4	Control rod travel mm 2	Fuel delivery cm^3/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,0+0,1	14,7-15,0	0,4 (0,75)			
300	6,8-7,0	1,5-2,0	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,8	1155-1170	300	7,5	100	min. 8,4	750	12,0-12,1
VH=	max. 46°			4,0	1195-1225			300	6,8-7,0	1100	11,2-11,3
				1350	0-1,0			380-420	=2,0	880	11,7-11,9
										975	11,3-11,6

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At 1155-1170 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm^3/-1000 strokes 2	rev/min 3	rev/min 4	cm^3/-1000 strokes 5	rev/min 6	cm^3/1000 strokes / Control rod travel mm 7
LDA	0,7 bar	-	LDA	0,2 bar	100	225,0-245,0
750	147,0-150,0 (144,5-152,5)		600	145,0-149,0 (142,0-152,0)		(221,0-249,0)
LDA	0,7 bar		LDA	0 bar	300	15,0-20,0
1100	135,0-141,0 (132,0-144,0)		500	120,0-123,0 (117,5-125,5)		(12,5-22,5)

Checking values in brackets

9.85

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES6P..LS 375 +RQ..PA 658-10	0,70	0 0,20 0,15	12,0-12,1 11,1-11,2 11,8-11,9 11,3-11,6

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

A4

A4

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAN 11,1r5
2. Edition
En

PES6P110A720LS375 RQV 250-1100 PA 669
Komb.-Nr. 0 402 046 272 = MAN-Nr. 2-7425
0 402 046 273 = MAN-Nr. 2-7433

supersedes 7.84
company: MAN
engine: D 2566 MTF
206 kW/2200 min^{-1}

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,4+0,1	14,6-14,9	0,4(0,75)			
250	7,3-7,5	1,0-1,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1130	15,2-17,8	-	-	-	ca.15	100	min.8,9	300	1,7-2,0
ca. 66	11,4	1140-1150					250	7,3-7,5	850	6,0-6,2
	4,0	1235-1265							1000	8,3
	1350	0-1,0				365-480 (3a)				

Torque control travel a = 0,9 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1140-1150*	LDA	0,2 bar	100	225,0-245,0	1100	12,4+0,1
1100	146,0-149,0		500	123,0-127,0		(221,0-249,0)	700	13,3+0,1
	(143,5-151,5)			(120,0-130,0)			900	13,0+0,2
LDA	0,7 bar		LDA	0 bar	250	10,0-15,0	1000	12,5+0,3
700	157,0-161,0		500	110,0-113,0		(7,5-17,5)		
	(154,0-164,0)			(107,5-115,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.85

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES6P..LS375 +RQV..PA 669	0,70		13,3-13,4
		0	11,3-11,4
		0,20	11,8-11,9
		0,32	12,6-12,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 r 4
3. Edition

En

PE 6 P 110 A 320 LS 375 RQV 250-1100 PA 674
Komb.-Nr. 0 402 046 282

supersedes 5.84
company: MAN
engine: D 2566 MTE
184 kW/2200 min^{-1}
MAN-Nr. 2-7208

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testbench data

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95-3,15) mm (from BDC) Zyl. 6: RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	12,8+0,1	15,9-16,2	0,4(0,75)			
250	6,9-7,1	1,1-1,6	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever ③a 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ①: rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 13	100	min.8,5	300	1,4-1,7
							250	6,9-7,1	800	5,0-5,2
ca.46	10,5	1140-1150					340- 400=2,0		1100	7,9
	4,0	1205-1235								
	1350	0 - 1,0								

Torque control travel a = 1,3 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1140-1150*	LDA	0,17 bar	100	215,0-235,0	800	12,8+0,1
800	159,0-162,0		500	122,0-126,0		(211,0-239,0)	1100	11,5+0,1
	(156,5-164,5)			(119,0-129,0)			900	12,4+0,2
1100	136,0-140,0		LDA	0 bar	250	11,0-16,0	1000	11,7+0,3
	(133,0-143,0)		500	97,0-100,0		(8,5-18,5)		
650	160,0-164,0			(94,5-102,5)				
	(157,0-167,0)							

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.85

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 P..LS 375 + RQV..PA 674	0,70	0 0,28 0,11	12,8-12,9 10,2-10,3 12,1-12,2 10,7-11,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

A8

En A8

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 HIP 11,9a1
2. Edition

En

PE6P 110 A 720 RS 380
Komb.-Nr. 0 401 846 501

RQV 250-1000 PA 434-2

supersedes 3.84
company Hispavinsa
engine: BSR 36 C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 -2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	15,5+0,1	18,8 - 19,0	0,4(0,75)			
250	8,5-8,7	2,4 - 3,0	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 16	100 250	min. 10,0 8,5- 8,7	250 350 430 1040	1,1-1,2 2,4-3,1 3,8-4,0 7,9
ca. 65	14,5 4,0 1300	1040-1050 1175-1205 0-1,0				350-480 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 188,0-190,0 (185,0-193,0)	1040-1050*	LDA 500	0 bar 141,0-144,0 (138,5-146,5)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.85

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A9

A9

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6P..RS 380 +RQV..PA 434-2	0,70	0 0,45 0,31	15,5-15,6 13,2-13,3 15,0-15,1 13,7-13,9

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

A10

PES 6 P 120 A 720 LS 388 RQ 250/1100 PA 658-7

Komb.-Nr. 0 402 046 263, 0 402 046 262
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes: 7.83
company: MAN
engine: D 2566 MK
206 kW (280 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,4+0,1	17,8-18,0	0,5(0,9)			
250	6,2-6,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ▭.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600 VH=max.46°	19,2-20,8	600	20,0	9,2 4,0 1400	1145-1160 1180-1210 0-1,0	250	6,3	100 250 350-390	min.7,8 6,2-6,4 =2,0	1100 750 840 985	10,2-10,3 11,9-12,0 11,5-11,7 10,5-10,8

Torque-control travel on flyweight assembly dimension a = 0,45 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
LDA 750	0,7 bar 178,0-180,0 (175,0-183,0)	-	LDA 500	0,31 bar 131,0-137,0 (128,0-140,0)	100	205,0-225,0 (201,0-229,0)
LDA 1100	0,7 bar 160,0-166,0 (157,0-169,0)		LDA 500	0 bar 104,0-106,0 (101,0-109,0)		
			LDA 650	0,7 bar 171,0-177,0 ~~(166,0-180,0)~~		

Checking values in brackets

10.85

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A11

AAA

D. Adjustment Test for Manifold Pressure Compensator MAN 11,1 q 16

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 P..LS 388 +RQ..PA 658-7	0,31	0,70 0 0,43	10,3-10,4 11,4-11,5 9,2-9,3 10,9-11,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

A12

A12

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 21,9 b 2

2. Edition

En

PE 12 P 120 A 320 LS 3819-1 RQV 350-1150 PA 493-3

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315° ±0,5° (±0,75°)

superseded 1.85

company Daimler-Benz

engine: OM 424 LA

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Komb.Nr. 0 401 840 719

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil 150 4119

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) ; RW = 9,0-12,0 mm; Zyl.12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,1+0,1	18,0-18,2	0,5(0,9)			
350	4,8-5,0	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1180	15,2-17,8	-	-	-	ca. 12	100	min.6,2	350	2,2-2,3
							350	4,5-4,7	510	3,2-3,5
ca. 65	11,1	1190-1200							1150	7,5-8,8
	4,0	1235-1265							1200	9,0
	1350	0-1,0				400-600 ③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed ②b ④a rev/min 3	Fuel delivery characteristics high idle speed ⑤a ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point ⑥ rev/min 6	cm³/1000 strokes 7	Torque control tra ⑤ rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 180,0-182,0 (177,0-185,0)	1190-1200*	LDA 650	0,7 bar 179,0-185,0 (176,0-188,0	100	150,0-170,0 (146,0-174,0	-	-
LDA 1150 **	0,7 bar 134,0-138,0 (131,0-141,0)		LDA 500	0 bar 131,0-133,0 (128,0-136,0	350	4,5-4,7 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

** Set at the reduced-delivery stop.

2.85

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A13

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE12P..LS3819-1 + RQV..PA493-3	0,70	0 0,54 0,47	12,1-12,2 10,1-10,3 11,4-11,5 10,6-10,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En A14

(1)

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MB 21,9 e 2
2. Edition
En

PE 12 P 110 A 320 LS 3820-1 RQV 350-1150 PA 378-1
Komb.-Nr. 0 401 840 709
1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

supersedes 2.84
company: Daimler-Benz
engine: OM 424
309 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Zyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,4+0,1	12,2-12,4	0,4(0,8)			
350	7,7-7,9	1,4-2,0	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 19	100	min.9,0	300	1,2-1,4
							300	7,4-7,6	580	3,6-3,9
ca. 64	10,4	1170-1180							870	5,2-5,5
	4,0	1235-1265				375-485			1150	7,8
	1300	0-1,0								
						(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	122,0-124,0 (119,0-127,0)	1170-1180*	600	96,0-100,0 (93,0-103,0)	100	130,0-140,0 (126,0-144,0)	-	-
			1150	90,0-94,0 (87,0-97,0) **				

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Set at the reduced-delivery stop.

9.85

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A15

A45

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 21,9 f

2. Edition

En

PE 12 P 120 A 320 LS 3825 RQV 350-1050 PA 693

supersedes 10.84

company: Daimler-Benz

engine: OM 424 A

1 - 5 - 9 - 8- 3 - 4 - 11- 10- 2- 6- 7- 12
0 - 15 - 60 - 75-120-135-180-195-240-255-300-315° ± 0,5° (± 0.75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	9,7-9,8	14,8-15,0	0,5(0,9)			
350	4,5-4,7	1,4-2,0	0,8(1,2)			
600	---	C, Sp. 4u.5	0,8(1,2)			
500	---					

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1180	15,2-17,8	-	-	-	ca.12	100	min.6,2	300	1,0-1,2
							350	4,5-4,7	550	3,4-3,6
ca. 58	8,7	1085-1095							800	4,8-5,0
	4,0	1165-1195							1050	7,1
	1300	0-1,0				350-600 ③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA 1050	0,7 bar 148,0-150,0 (145,0-153,0)	1085-1095*	LDA 600	0,7 bar 146,0-152,0 (143,0-155,0)	100	150,0-170,0 (146,0-174,0)	-	-
			LDA 500	0 bar 128,0-130,0 (125,0-133,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.85

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A16

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 12 P..LS 3825 +RQV..PA 693	0,70	0 0,36 0,32	9,7-9,8 9,3-9,5 9,5-9,6 9,4-9,6

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

(1)

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MB 5,7 n 12
1. Edition
En

PES 6 A 90 D 410 RS 2293 RQV 300-1425 AB 1214 L
Komb.-Nr. 9 400 085 247

supersedes –
company: Daimler-Benz
engine: OM 352 A

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,2+0,1	7,6 - 7,7	0,3 (0,5)			
300	7,6-7,8	1,2 - 1,6	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in ▭.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1420	16,0-19,4	-	-	-	ca.15	100	min. 8,5	300	1,1-1,5
							300	7,6-7,8	600	3,1-3,3
ca. 61	10,2	1440-1450					690	-750=2,0	1000	4,5-4,7
	4,0	1560-1590							1440	8,6
	1750	0 - 1,0				(3a)				

Torque control travel a = – mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1400	0,2 bar 75,5 - 76,5 (73,5 - 78,5)	1440-1450*	LDA 500	0,2 bar 58,5 - 60,5 (56,0 - 63,0)	100	70,0-80,0 =13,8-14,2 mm RW	-	-
			LDA 500	0 bar 51,0 - 54,0 (49,5 - 56,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 A..RS 2293 +RSV..AB 1214 L	0,20	0 0,12 0,09	11,2 - 11,3 10,6 - 10,7 11,0 - 11,1 10,7 - 10,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 18,3 g

1. Edition

En

PE 10 P 120 A 320 LS 3831 RQ 750 PA 635-3
1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4
0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company Daimler-Benz
engine OM 423 LA
278 kW
Komb.-Nr. 0 401 849 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) Zyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,0+0,1	19,3-19,5	0,5(0,8)			
300	4,9-5,1	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ▭.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,0 4,0 840	750-755 778-791 0-1,5	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750-755 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
700	193,0-195,0 (190,0-198,0)	-	-	-	100	160,0-180,0 (156,0-184,0)

Checking values in brackets

9.85

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A10

PE 10 P 120 A 520/4 LS 3833 RQ 750 PA 663-7
1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4
0-37-72-99-144-171-216-243-288-315° + 0,5° (+ 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –
company: MAN
engine: D 2540 LE
352 kW
MAN-Nr. 2-7666
Komb.-NR. 0 401 849 721

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,2-4,3 (4,15-4,35) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,3+0,1	22,9 - 23,1	0,5 (0,9)			
300	5,8-6,0	1,4 - 2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	12,3 4,0 950	750-755 780-793 0 -1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750 - 755 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
700	229,0 - 231,0 (226,0 - 234,0)	-	-	-	-	-

Checking values in brackets

9.85

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A2A

PE 6 P 120 A 720 RS 7001 W RQ 200/1100 PA 713
Komb.-Nr. 0 402 646 819 W
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes -
company. Scania
engine DS 1128

Please note instructions on sheet 2

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 5,0-5,1 (4,95-5,5) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,6+0,1	18,0 - 18,2	0,6 (0,9)			3,3 ± 0,1
225	4,4-4,6	1,3 - 1,7	0,3 (0,6)			(3,0 - 3,5) **

Adjust the fuel delivery from each outlet according to the values in ▭.

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
1300	15,2-17,8	1300	16,5	11,6 4,6 1400	1145-1160 1270-1300 0 - 1,0	225	4,5	100 225 300	min. 5,9 4,4-4,6 340=2,0	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1145 - 1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/mn 6	Control rod travel mm cm³/1000 strokes 7
LDA 700	0,5 bar 180,0 - 182,0 (177,0 - 185,0)	-	LDA 1100	0,5 bar 178,0 - 186,0 (176,0 - 188,0)	100	240,0 - 290,0 = 20,0 - 21,0 mm RW
			LDA 500	0 bar 120,0 - 124,0 (118,0 - 126,0)		

Checking values in brackets

8.85

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P..RS 7001 W + RQ..PA 713	0,50	0 0,28 0,17	12,6 - 12,7 10,3 - 10,4 11,4 - 11,5 10,5 - 10,7

Notes:
(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 4. 30.8.1984
- Start of fuel delivery-engine: 11° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 2,9 - 3,1 mm.

Test Specifications Fuel Injection Pumps ② and Governors

PE 8 P 120 A 920/4 LS 7003 RQ 900 PA 695
Komb.-Nr. 9 400 087 298
1 - 2 - 7 - 3 - 4 - 5 - 6 - 8 je 45° + 0,5° (+ 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes –
company: Saab Scania
engine: DS 14
293 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 5,0-5,1 (4,95-5,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,8-0,1	18,6 - 18,8	0,6(0,9)			3,3 ± 0,1 (3,0 - 3,5)

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,8 4,0 1000	900-905 941-955 0 -1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 900-905 min^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
850	186,0 - 188,0 (183,0 - 191,0)	-	-	-	100	240,0 - 290,0 = 20,0 - 21,0 mm RW

Checking values in brackets

8.85

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 14,2 g
2. Edition

En

PE 8 P 120 A 920/4 LS 7002 RQV 275-1000 PA 547-3

supersedes 10.84

1 - 2 - 7 - 3 - 4 - 5 - 6 - 8 je 45° ± 0,5° (± 0,75°)

company: Scania
engine: DS 1406
LKW 142-Kran

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

Komb.-Nr. 0 402 648 810

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 5,0-5,1 (4,95-5,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,2+0,1	18,7 - 18,9	0,6 (0,9)			3,3 ± 0,1
275	4,4-4,6	1,0 - 1,4	0,3 (0,6)			(3,0 - 3,5) **

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1090	15,2-17,8	-	-	-	ca. 8	100	min. 5,9	275	1,0-1,1
							275	4,4-4,6	350	1,8-2,7
ca. 60	12,2	1040-1050					320	-380=2,0	430	3,3-4,4
	4,0	1190-1220							500	4,8-5,0
	1250	0 - 1,0							1040	8,1
						(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 187,0-189,0 (184,0-192,0)	1040-1050 *	LDA 1000	0,9 bar 183,0-191,0 (181,0-193,0)	100	240,0-290,0 =20,0-21,0 mm RW	-	-
			LDA 500	0 bar 137,0-141,0 (135,0-143,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.85

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B1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 8 P..LS 7002 + RQV..PA 547-3	0,90	0 0,35 0,23	13,2 - 13,3 11,3 - 11,4 12,8 - 12,9 11,9 - 12,1

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 2.11.83
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-4-2-6-3-7-8

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 2,9 - 3,1 mm.

B2

Test specifications Fuel injection pumps and governors

PE 8 ZW 160/120 RS1027/11 RQUV 300-900 ZWA 51 R
Komb.-Nr. 0 402 438 025

Replaces 1.85
Firm: MTU
Engine: 396

1-2-6-3-4-5-7-8 je 45 ° ± 0,5 ° (± 0,75 °)
Note VDT-W-Allg./7 !

Testoil-ISO 4113

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) Zyl. 8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18	513,0-523,0	16,0 (24,0)	510,0-526,0	
600	9	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 79	900	18,0-19,0	ca. 27 (max. 30)	375	8,0	ca. 21	300	8,0		- -
	700	18,0-19,0								
ca. 79	17,0	905-925		200	14,3-17,2		200	10,8-14,2		
	4,0	1000-1050		300	10,3-11,8		400	3,9-5,0		
	1100	0 - 2,0		500	2,5-3,7		485-590 = 0			
				590-720 = 0						

Torque control travel a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	cm³/1000 strokes 7
-	not known	300 Idle stop RW = 8,0 mm	-	-	-	-

Checking values in brackets

9.85

Test specifications Fuel injection pumps and governors

En.

PE 6 ZW 160/120 RS 1028/11 RQUV 300-900 ZWA 51 R

Komb.-Nr. 0 402 436 058

Replaces 1.85
Firm: MTU
Engine: 396

1- 2- 3 - 4 - 5 - 6
0-45-120-165-240-185 ° ± 0,5 ° (± 0,75 °)

Note VDT-W-Allg./7 !

Testoil-ISO 4113

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) Zyl. 6

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 79	900	18,0-19,0	ca. 27 (max. 30)	375	8,0	ca. 21	300	8,0	-	-
	700	18,0-19,0								
ca. 79	17,0	905-925		200	14,3-17,3		200	10,8-14,2		
	4,0	1000-1050		300	10,3-11,3		400	3,9-5,0		
	1100	0 - 2,0		500	2,5-3,7		485-590 = 0			
				590-720 = 0						

Torque control travel a = - mm Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	cm³/1000 strokes 7
-	not known !	300 Idle stop RW = 8,0 mm	-	-	-	-

Checking values in brackets

9.85

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B4

Test specifications Fuel injection pumps and governors

PE 6 ZW 160/120 RS 1028/11 RQUV 300-1200 ZWA 51 R

Komb.-Nr. 0 402 436 057

Replaces 1.85
Firm: MTU
Engine: 6 V 331

1- 2- 3 - 4 - 5 - 6
0-45-120-165-240-285° ± 0,5° (± 0,75°)
Note VDT-W-Allg./7 !

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) Zyl. 6

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever de-flection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 84	1200	18,0- 19,0	ca. 27 (max.30)	375	8,0	ca. 21	300	8,0	-	-
	17,0	1205-1225		200	14,3-17,2		200	10,8-14,2		
	4,0	1320-1380		300	10,3-11,8		400	3,9-5,0		
	1400	0-2,0		500	2,5-3,7		485-590 = 0			
				590-720 = 0						

Torque control travel a = mm Speed regulation: At 1mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	cm³/1000 strokes 7
-	not known	300 Idle stop RW = 8,0 mm	-	-	-	-

Checking values in brackets

09.85

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B5

Test specifications Fuel injection pumps and governors

PE 12 ZW 150/120 RS 1029 RQV 300-1200 ZWA 51 R
Komb.-Nr. 0 402 430 012

Replaces 2.83
Firm: MTU
Engine: 12 V 331

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6
0-45-60-105-120-165-180-225-240-285-300-345 ° ±0,5 °(±0,75 °)

Note VDT-W-Allg./7 !

Testoil-ISO 4113

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) Zyl.12

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	501,0-511,0	15,0 (22,0)	498,0-514,0	
600	9,0	110,0-130,0	15,0 (22,0)	107,0-133,0	
300	9,0	46,0-72,0	10,0 (15,0)	43,0-75,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 84	1200	18,0-19,0	ca. 27	375	8,0	ca. 21	300	8,0	-	-
ca. 84	1200	18,0-19,0	(max.30)	200	14,3-17,2		200	10,8-14,2		
	17,0	1205 -1225		300	10,3-11,3		400	3,9-5,0		
	4,0	1320-1380		500	2,5-2,7		485-590 = 0			
	1400	0 - 2,0		590-720 = 0						

Torque control travel a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	cm³/1000 strokes 7
-	not known	300 Idle stop RW = 8,0 mm	-	-		

Checking values in brackets

9/85

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 39,7 c 2

2. Edition

En.

PE 12 ZW 160/120 RS 1029/11 RQUV 300 - 900 ZWA 51 R

Komb.-Nr. 0 402 430 010

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6

0-45-60-105-120-165-180-225-240-285-300-345° ± 0,5° (± 0,75°)

Note VDT-W-Allg./7 !

Replaces 2.85

Firm: MTU

Engine: 396

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testgerät ATE

A. Fuel-injection-pump settings

Port closing at prestroke 2,5 -2,6 (2,45-2,65) mm (from BDC Zyl. 12

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	22,0 (33,0)	510,0 - 526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0 - 165,0	
300	9,0	72,0- 92,0	11,0 (16,0)	67,0 - 97,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 79	900	18,0-19,0	ca.27 (max.30)	375	8,0	ca.21	300	8,0	-	-
ca. 79	700	18,0-19,0		200	14,3-17,2		200	10,8-14,2		
	17,0	905 - 925		300	10,3-11,8		400	3,9- 5,0		
	4,0	1000 -1050		500	2,5- 3,7		485	- 590 = 0		
	1100	0 - 2,0		590	- 720 = 0					

Torque control travel a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
-	not known	Idle stop 300 RW = 8,0 mm	-	-	-	-

Checking values in brackets

09.85

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B7

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 3,5e
2. Edition
En

Testoil-ISO 4113

VA 4/100 H 1150 CR 12-10

supersedes 8.73
company IHC
engine D 206

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm ± 0,04
plunger lift of 0.36 mm related to outlet "A".

1. Settings	rev/min	Settings		Charge-air press. kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	2,5-3,5	mm		
1.2 Supply pump pressure	800	4,5-5,0	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	61,5-62,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	370	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind. 90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1230	21,0-29,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	350-520(320-550)	600	800	1020-1150
	mm	Start	0,9-1,9(0,6-2,2)	(2,2-3,8)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	200		800	1150
	kp/cm²	1,5-2,0(1,3-2,2)		(4,3-5,2)	5,8-6,3(5,6-6,5)
Overflow delivery	rev/min	500			1150
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1250-1310	0		
		(1230-1330)			
		1230		(20,0-30,0)	
		1150-1170	Start		
		1200	66,0-69,0	(65,0-70,0)	
		800		(61,0-63,0)	
	Stop	1150	0		
Idle stop	Full	420-500	0		
		(400-520)			
		370		(11,0-19,0)	
	Start	100	mind. 90,0		
End stop		220-300			

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B8

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4°$ $\beta = 40 \pm 8°$ $\gamma = 30 - 8°$ $\delta = 60 + 8°$	Pump Dimension IV = 2,0 mm Dimension V = 24,6 mm

B9

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 BUK 1,5 b

2. Edition

En

VE 3/10 F 1800 L 33-1

0 460 403 002

Overflow temperature 45° C

supersedes

company Bukh

engine: DV 36 ME

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1600	4,1-4,5	mm		
1.2 Supply-pump pressure	1600	6,4-7,0	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1600	37,5-38,5	cm³/1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure					
1.4 Idle regulation	500	6,0-10,0	cm³/1000 strokes		2,5 (3,0)
1.5 Full-speed regulation	1850	17,0-23,0	cm³/1000 strokes		
1.6 Start	100	min. 38,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1600	1800
	mm	0,8-1,6 (0,5-1,9)	(3,6-5,0)	5,1-5,9 (4,8-6,2)
2.2 Supply pump	n = rev/min	400		1800
	bar (kgf/cm²)	1,7-2-3		7,2-7,8
Overflow delivery	n = rev/min	500		1800
	cm³/10 s	55-110 (40-125)		55-110 (40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1970	max. 2,0		
	1900	5,0		
	1850		(16,0-24,0)	
	1750	34,7-37,3	(33,7-38,3)	
	1600		(35,7-40,3)	
	1000	39,0-42,0	(38,2-42,8)	
	600	31,5-35,5	(30,5-36,5)	
switch-off	1800	0		
Idle stop	500		(4,0-12,0)	
	530	min. 2,0		
	600	max. 2,0		
End stop	450	min. 43,0		
	550	max. 43,0		

2.4 Solenoid	cut-in voltage	min. 10,0 V
		rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,9-6,1
MS	0,9-1,1
SVS	max. 4,2
XK	20,2-22,2
XL	12,2-15,5

Observations

pushing electronagnet

B10

BAD

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Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,0 a

4. Edition

En

VE 5/10 F 2400 L 35 (P)
0 460 405 001; ... 002

supersedes 9.82
company: VWW
engine: 153 Audi 100

Overflow temperature 45° C

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,14 mm ± 0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	2,4-2,8	mm		
1.2 Supply-pump pressure	1400	5,0-5,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1400	32,5-33,5	cm³/1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure	375	6,0-10,0	cm³/1000 strokes		2,0 (3,0)
1.4 Idle regulation	2650	6,0-12,0	cm³/1000 strokes		
1.5 Full-speed regulation	100	min.50,0	cm³/1000 strokes		
1.6 Start	-	-			
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1400	2400
	mm	1,3-2,1(1,0-2,4)	(1,9-3,3)	5,1-5,9(4,8-6,2)
2.2 Supply pump	n = rev/min	500		2400
	bar (kgf/cm²)	2,8-3,4		7,3-7,9
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2650		(5,0-13,0)	
	2500		(24,0-32,0)	
	2400	27,0-29,0	(25,7-30,3)	
	1400		(30,7-35,3)	
	750	23,3-26,3	(21,8-27,8)	
switch-off electr.	400	0		
Idle stop	500	max. 3,0		
	375		(4,0-12,0)	
End stop	400	min. 15,5		
	500	max. 23,5		

2.4 Solenoid — cut-in voltage min. 10,0 V, rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,7-5,9
MS	1,7-1,9
SVS	max. 3,0
XK	18,5-20,5
XL	9,0-12,5

Observations

BAA

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Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 2,0 a 1

3. Edition

En

VE 5/10 F 2400 L 35-2 (P)
0 460 405 003; ... 004

supersedes 10.82
company: VWW
engine: 153 Audi 5000 (USA)

Overflow temperature 45° C

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,14 mm ± 0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	2,4-2,8	mm		
1.2 Supply-pump pressure	1400	5,0-5,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1400	32,5-33,5	cm³/1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure					
1.4 Idle regulation	375	6,0-10,0	cm³/1000 strokes		2,0 (3,0)
1.5 Full-speed regulation	2650	6,0-12,0	cm³/1000 strokes		
1.6 Start	100	min.50,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1400	2400
	mm	1,3-2,1(1,0-2,4)	(1,9-3,3)	5,1-5,9(4,8-6,2)
2.2 Supply pump	n = rev/min	500		2400
	bar (kgf/cm²)	2,8-3,4		7,3-7,9
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2650		(5,0-13,0)	
	2500	24,5-31,5	(24,0-32,0)	
	2400	27,0-29,0	(25,7-30,3)	
	1400		(30,7-35,3)	
	750	23,3-26,3	(21,8-27,8)	
switch-off				
electr.	400	0		
Idle stop	500	max. 3,0		
	375		(4,0-12,0)	
Endanschlag	400	min. 15,5		
	500	max. 23,5		

2.4 Solenoid	cut-in voltage	min. 10,0 V
		rated voltage 12 V.

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	-
KF	5,7-5,9
MS	1,7-1,9
SVS	max. 3,0
XL	18,5-20,5
XL	9,0-12,5

Observations

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9.85

B12

B12

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,0 c

3. Edition

En

Testoil-ISO 4113

VE 5/10 F 2400 L 35-6 (P)

0 460 405 027; 028

Overflow temperature 45° C

supersedes 10.82
company: VWW
engine: 153 Audi 100 Aut.

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,14 mm ± 0,02 (0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	2,4-2,8	mm		
1.2 Supply-pump pressure	1400	5,0-5,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1400	32,5-33,5	cm³/1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure	375	6,0-10,0	cm³/1000 strokes		2,0 (3,0)
1.4 Idle regulation	2650	6,0-12,0	cm³/1000 strokes		
1.5 Full-speed regulation	100	min. 50,0	cm³/1000 strokes		
1.6 Start	--	--			
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1400 / 2400
	mm	1,3-2,1 (1,0-2,4)	(1,9-3,3) / 5,1-5,9 (4,8-6,2)
2.2 Supply pump	n = rev/min	500	2400
	bar (kgf/cm²)	2,8-3,4	7,3-7,9
Overflow delivery	n = rev/min	500	2400
	cm³/10 s	55-138 (40-153)	55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2650		(5,0-13,0)	
	2500	24,5-31,5	(24,0-32,0)	
	2400	27,0-29,0	(25,7-30,3)	
	1400		(30,7-35,3)	
	750	23,3-26,3	(21,8-27,8)	
switch-off mech.	2400	0		
switch-off electr.	400	0		
Idle stop	500	max. 3,0		
	375		(4,0-12,0)	
End stop	400	min. 15,5		
	500	max. 23,5		

2.4 Solenoid — cut-in voltage: min. 10,0 V; rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,7-5,9
MS	1,7-1,9
SVS	max. 3,0
XK	18,5-20,5
XL	9,0-12,5

Observations

Mechanical Stop control

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B13

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 RVI 3,6 a 1

3. Edition

En

VE 4/12 F 1500 R 51-1 Overflow temperature 45° C
0 460 424 005

supersedes 9.83
company: RVI-Renault
engine: 720 S

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	3,3-3,7	mm	0,8	
1.2 Supply-pump pressure	1000	4,7-5,3	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1000	87,5-88,5	cm³/1000 strokes	0,8	4,0 (4,5)
Full-load delivery without charge-air pressure	500	66,5-67,5	cm³/1000 strokes	0	
1.4 Idle regulation	325	14,0-20,0	cm³/1000 strokes	0	3,5 (4,5)
1.5 Full-speed regulation	1650	17,0-23,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 100,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	–	–			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,8bar	n = rev/min	750	1000	1500
	mm	1,3-2,1(1,0-2,4)	(2,8-4,1)	6,1-6,9(5,8-7,2)
2.2 Supply pump LDA=0,8bar	n = rev/min	300		1500
	bar (kgf/cm²)	1,7-2,3		6,7-7,3
Overflow delivery	n = rev/min	500		1500
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1700	max. 3,0		0,8
	1650		(15,0-25,0)	0,8
	1600	53,0-61,0	(52,0-62,0)	0,8
	1500	84,0-87,0	(82,5-88,5)	0,8
	1000		(85,0-91,0)	0,8
	750	85,0-88,0	(83,5-89,5)	0,8
	600 *	76,5-77,5	(74,0-80,0)	0,4
	500		(63,2-70,8)	0
switch-off	1500	0		
Idle stop	400	max. 5,0		
	325		(12,0-22,0)	
End stop	200	min. 90,0		
	350	max. 90,0		
2.4 Solenoid	cut-in voltage	min. 22,0 V		
		rated voltage 24,0 V		

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	max. 6,0
XK	20,1-22,1
XL	12,6-16,4

Observations
24 V Pulling electromagnet

* LDA-stroke 4,5 mm
Use adjusting nut (46) to correct.

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B14

Test Specifications Distributor-type Fuel-injection Pumps

En

VE 6/12 F 1350 R 64 Nozzle-and-holder assembly

0 460 426 016 1 688 901 020

172 + 3 bar

supersedes 7.84
company: IHC
engine: D 358/PC 11

Testoil-ISO 4113

Setting of the pointer at a stroke of 1 mm in relation to outlet "A"

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm Overflow temperature 45° C

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1150	5,2-5,6	mm		
1.2 Supply-pump pressure	1150	5,6-6,2	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure	1150	84,0-85,0	cm³/1000 strokes		3,5 (4,5)
1.4 Idle regulation	500	14,5-20,5	cm³/1000 strokes		3,5 (4,5)
1.5 Full-speed regulation	1400	44,0-50,0	cm³/1000 strokes		
1.6 Start	100	min.100,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1150	1300
	mm	1,6-2,4(1,3-2,7)	(4,7-6,1)	5,3-6,1(5,0-6,4)
2.2 Supply pump	n = rev/min	400		1300
	bar (kgf/cm²)	2,7-3,3		6,0-6,6
Overflow delivery	n = rev/min	500		1350
	cm³/10 s	55-138(40-163)		55-138(40-158)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1510	max. 1,0	
	1450	9,0-17,0 (8,0-18,0)	
	1400	(42,0-52,0)	
	1300	80,0-83,0 (78,5-84,5)	
	1150	(81,5-87,5)	
	800	77,0-81,0 (76,0-82,0)	
	500	65,0-70,0(63,7-71,3)	
switch-off	1350	0	
Idle stop	570	max. 1,0	
	520	min. 4,0	
	500	(12,5-22,5)	
End stop	250	min. 100	
	350	max. 80	

2.4 Solenoid — cut-in voltage min. 10 V; rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,0-1,2
SVS	max.6,0
XK	20,2-22,2
XL	15,8-19,8

Observations

BAS

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Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6 d
4. Edition
En

Testoil-ISO 4113

VE 4/9 F 2400 R 66-8, R 66-8 P
0 460 494 077
078

supersedes 7.82
company: VWW
engine: 1,6 l Rabbit

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,9-3,3	mm		
1.2 Supply-pump pressure	1500	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	30,0-31,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-	cm³/1000 strokes		
1.4 Idle regulation	415	7,0-11,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.38,0	cm³/1000 strokes		
1.6 Start	2600	11,0-17,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	1,3-2,1(1,0-2,4)	(2,4-3,8)	6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min	400		2400
	bar (kgf/cm²)	2,1-2,7		7,0-7,6
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-138(40-123)		55-138(40-123)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2700	2,5-9,5	(2,0-10,0)	
	2600		(10,0-18,0)	
	2400	26,0-28,0	(24,7-29,3)	
	1500		(28,2-32,8)	
	600	17,5-20,5	(16,0-22,0)	
switch-off				
electr.	400	0		
Idle stop	1200	max. 5,0		
	600	max. 6,0		
	415		(5,0-13,0)	
End stop	400	min. 13,5		
	500	max. 19,5		
2.4 Solenoid	cut-in voltage	min. 10,0 V		
		rated voltage 12 V.		

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max.2,5
*	1,8-2,4
XK	18,4-20,4
XL	10,5-13,8

Observations

* operating stroke (cold-start accel.)

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Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VMA 2,2 a 1
2. Edition

En

Testoil:ISO 4113

VE 4/10 F 2100 L 75-1 Overflow temperature 45° C
0 460 404 034

supersedes 5.84
company: VM-Motorri
engine: HR 492 HT

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1600	5,3 - 5,7	mm	0,8	
1.2 Supply-pump pressure	1600	5,8 - 6,4	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1600	47,5-48,5	cm³/1000 strokes	0,8	max. 3,0
Full-load delivery without charge-air pressure	600	35,0-36,0	cm³/1000 strokes	0	
1.4 Idle regulation	400	15,0-19,0	cm³/1000 strokes	0	max. 3,0
1.5 Full-speed regulation	2300	24,5-30,5	cm³/1000 strokes	0,8	
1.6 Start	100	min. 50	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA = 0,8 bar	n = rev/min	1000	1600	2100
	mm	1,7-2,5 (1,4-2,8)	(4,8-6,2)	7,6-8,6 (7,5-8,9
2.2 Supply pump LDA = 0,8 bar	n = rev/min	400		2100
	bar (kgf/cm²)	1,5-2,1		7,5-8,1
Overflow delivery	n = rev/min	400		2100
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2450	max. 7,0	0,8
	2300	(23,5-31,5)	0,8
	2100	41,5-44,5(40,8-45,2)	0,8
	1600	31,5-34,5(30,8-35,2)	0
	1600	(45,8-50,2)	0,8
	* 700	43,5-45,5(42,3-46,7)	0,3
	600	(33,3-37,7)	0
switch-off			
Idle stop	550	max. 2,0	
	450	min. 2,0	
	400	(13,0-21,0)	
End stop	400	min. 45	
	500	max. 37	

2.4 Solenoid — cut-in voltage: min. 10 V, rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,3
KF	5,7-5,9
MS	0,7-0,9
SVS	3,8
XK	20,2-22,2
XL	10,3-13,6

Observations

* LDA-stroke 4,2 mm
Use adjusting nut (46) to correct.

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Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 Ope 1,6 d
6. Edition
En

Testoil-ISO 4113

VE 4/9 F 2300 R 82; VE ... R 82-1

supersedes 08.84
company: Opel
engine: 2033-1,6 l

0 460 494 071 . 0 460 494 114

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,1-3,5	mm		
1.2 Supply-pump pressure	1500	5,0-5,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		2,5
Full-load delivery without charge-air pressure	1500	29,0-30,0	cm³/1000 strokes		
1.4 Idle regulation	450	6,0-10,0	cm³/1000 strokes		2,5
1.5 Full-speed regulation	2625	17,0-23,0	cm³/1000 strokes		
1.6 Start	100	min. 40,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	**				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1200	1500	2300
	mm	1,5-2,3 (1,2-2,6)	(2,6-4,0)	6,5-7,3 (6,2-7,6)
2.2 Supply pump	n = rev/min	600		2300
	bar (kgf/cm²)	2,4-3,0		7,3-7,9
Overflow delivery	n = rev/min	500		2300
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	3000	max. 5,0		
	2785	7,0-13,0	(6,0-14,0)	
	2625		(16,0-24,0)	
	2300	27,1-29,1	(25,8-30,4)	
	1500		(27,2-31,8	
	600	22,5-25,5	(21,0-27,0)	
switch-off	2300	0		
Idle stop	1200	max. 1,0		
	650	2,0-7,0	(0,5-8,5)	
	450		(4,0-12,0)	
End stop	350	min. 28		
	500	max. 28		

2.4 Solenoid — cut-in voltage min. 10 V
rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max. 2,0
*	1,8-2,4
XK	22,3-23,3
XL	11,0-14,9

Observations

* operating stroke (cold-start accel.)

**Observa VDT-I-460/138

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B18

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 STE 4,0 K
2. Edition
En

Testoil-ISO 4113

VE 4/11 F 1200 R 94-2 (FD 442)
0 460 414 014
Note VDT-I-460/139
Overflow temperature 45° C

supersedes 8.84
company: Steyr
engine: WD 411.45
47 kW

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	800	3,4 - 3,8	mm		
1.2 Supply-pump pressure	800	4,7 - 5,3	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	–	–	cm³/1000 strokes		
Full-load delivery without charge-air pressure	800	68,5-69,5	cm³/1000 strokes		3,0 (3,5)
1.4 Idle regulation	300	21,0 - 25,0	cm³/1000 strokes		3,0 (4,0)
1.5 Full-speed regulation	1300	19,0 - 25,0	cm³/1000 strokes		
1.6 Start	100	min. 78,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	800	1200
	mm	0,7-1,5 (0,4-1,8)	(2,9-4,3)	6,6-7,4 (6,3-7,7)
2.2 Supply pump	n = rev/min	500		1200
	bar (kgf/cm²)	3,2-3,8		6,5-7,1
Overflow delivery	n = rev/min	500		1200
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1340	max. 3,0	
	1300	(17,5-26,5)	
	1250	51,0-59,0 (50,5-59,5)	
	1180	68,0-70,0 (66,3-71,7)	
	800	(66,3-71,7)	
	500	64,5-67,5 (62,6-69,0)	
switch-off			
Idle stop	400	max. 1,5	
	350	5,0-11,0 (3,5-12,5)	
	300	(18,5-27,5)	
End stop	170	min. 78	
	250	min. 65	

2.4 Solenoid — max. cut-in voltage
test voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	3,3
KF	5,3
MS	1,0
SVS	4,0
	-
A	
B	

Observations

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BAS

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 1,9 a
2. Edition

En

VE 4/9 F 2300 R 114 Overflow temperature 45° C
0 460 494 112
DHK: 1 688 901 022/130 bar
Fuel injection test tubing 1 680 750 073

supersedes 11.82
company: Peugeot
engine: XUD 9

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	2000	7,8-8,2	mm		
1.2 Supply-pump pressure	1250	3,9-4,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1250	28,8-29,8	cm³/1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure			cm³/1000 strokes		
1.4 Idle regulation	400	4,0-8,0	cm³/1000 strokes		2,5 (3,0)
1.5 Full-speed regulation	2400	19,3-25,3	cm³/1000 strokes		
1.6 Start	100	min.44,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	2000	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	700	1250	2000
	mm	0,5-1,5 (0,3-1,7)	3,4-4,2 (3,1-4,5)	(7,3-8,7)
2.2 Supply pump	n = rev/min	700		2000
	bar (kgf/cm²)	2,3-2,9		5,9-6,5
Overflow delivery	n = rev/min	600		2300
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2650	max. 7,0	
	2500	10,7-16,7 (9,7-17,7)	
	2400	(18,3-26,3)	
	2250	28,9-30,9 (27,6-32,2)	
	2000	29,7-31,7 (28,4-33,0)	
	1250	(27,0-31,6)	
	700	29,5-32,5 (28,0-34,0)	
switch-off			
Idle stop	400	(2,0-10,0)	
	450	max. 5,0	
End stop	250	min. 40	
	500	max. 35	

2.4 Solenoid — cut-in voltage: min. 10 V
rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,3
KF	5,7 - 5,9
MS	1,3 - 1,5
SVS	max. 4,0
A XK	18,9-20,9
B XL	9,6 -13,0

Observations

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Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 1,7 h
3. Edition
En

VE 4/10 F 2050 R 124
0 460 404 031

Overflow temperature 45° C

supersedes 9.83
company: Fiat
engine: 8144-81

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-480/..

Pre-stroke setting 0,2 mm ± 0,02 (0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	5,3 - 5,7	mm	0,75	
1.2 Supply-pump pressure	1500	6,1 - 6,7	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	1500	61,5 - 62,5	cm³/1000 strokes	0,75	3,0 (3,5)
Full-load delivery without charge-air pressure	600	43,5 - 44,5	cm³/1000 strokes	0	
1.4 Idle regulation	350	12,5 - 16,5	cm³/1000 strokes	0	3,0 (3,5)
1.5 Full-speed regulation	2200	40,0 - 46,0	cm³/1000 strokes	0,75	
1.6 Start	100	min. 60,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	1500	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600 (0,75 bar)	1500 (0,75 bar)	2050 (0,75 bar)
	mm	0,9-1,7 (0,6-2,0)	(4,8-6,2)	7,6-8,4 (7,3-8,7)
2.2 Supply pump	n = rev/min	400 (0 bar)	600 (0 bar)	2050 (0,75 bar)
	bar (kgf/cm²)	3,4-4,0	4,0-4,6	7,4-8,0
Overflow delivery	n = rev/min	600		2050 (0,75 bar)
	cm³/10 s	28-83 (13-98)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2400	max. 2,0		0,75
	2300	16,0-24,0	(15,5-24,5)	0,75
	2200		(38,5-47,5)	0,75
	2050	53,1-56,1	(51,9-57,3)	0,75
	1500		(59,3-64,7)	0,75
	*800	53,5-54,5	(50,6-57,4)	0,2
	600		(40,0-47,4)	0
-				
switch-off				
	2050	0		
Idle stop	350		(10,0-19,0)	
	450	max. 3,5		
	500	max. 2,0		
End stop	350	min. 55		
	450	max. 55		

2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,7 - 6,0
MS	1,2 - 1,4
SVS	3,2
XK	25,0 -27,0
XL	9,8 -13,1

Observations

* LDA-stroke 3,8 mm
Use adjusting nut (46) to correct.

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Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FOR 1,6 a
2. Edition

En

VE 4/9 F 2400 R 125 Overflow temperature 45° C

supersedes 2.84
company: Ford
engine: Kent Diesel

0 460 494 122
DHK 1 688 901 022/130 bar
Fuel injection test tubing 6x2x450 mm/1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/ .

Pre-stroke setting mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,3- 4,7	mm		
1.2 Supply-pump pressure	1500	5,3- 5,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure	1750	28,4-29,4	cm³/1000 strokes		2,5 (3,0)
1.4 Idle regulation	420	9,0-13,0	cm³/1000 strokes		2,0 (3,0)
1.5 Full-speed regulation	2675	10,4-16,4	cm³/1000 strokes		
1.6 Start	100	min. 50,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	800	1500	2000
	mm	1,0-1,8(0,7-2,1)	(3,8-5,2)	6,4-7,2(6,1-7,5)
2.2 Supply pump	n = rev/min	600		2000
	bar (kgf/cm²)	3,1-3,7		6,6-7,2
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2950	max. 2,0	
	2675	(9,4-17,4)	
	2550	19,5-25,5 (18,5-26,5)	
	2400	27,7-29,7 (26,4-31,0)	
	1750	(26,6-31,2)	
	1000	24,8-27,8 (23,3-29,3)	
	600	23,4-26,4 (21,9-27,9)	
switch-off	2400	0	
Idle stop	570	max. 2,5	
	475	3,3-7,3 (1,3-9,3)	
	420	(7,0-15,0)	
End stop	400	min. 30,0	
	500	max. 30,0	

2.4 Solenoid — cut-in voltage: min. 10 V, rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-6,0
MS	1,6-1,85
SVS	3,4
XK	23,3-25,3
XL	10,4-13,8

Observations

Check operstion of hydr. cold-start accel.. Do not apply any voltage to expansion element. At 600 min/1 a timing-device travel of 2.2 - 2.4 mm must be obtained.

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B22

Test Specifications Distributor-type Fuel-injection Pumps

Eh

WPP G01/4 PEU 2,3 k 1
3. Edition

Testoil-ISO 4113

VE 4/9 F 2075 R 126-2 Overflow temperature 45° C
0 460 494 155
DHK 1 688 901 022/130 bar
Fuel injection test tubing 6x2x450 mm/1 680 750 073

supersedes 1.85
company: Peugeot
engine: XD 3 S (Special vehicle)

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	5,8 - 6,2	mm	0,8	
1.2 Supply-pump pressure	1500	5,6 - 6,2	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	52,5 - 53,5	cm³/1000 strokes	0,8	2,5 (3,0)
Full-load delivery without charge-air pressure	500	41,3 - 42,3	cm³/1000 strokes	0	
1.4 Idle regulation	350	20,0 - 24,0	cm³/1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2300	26,5 - 32,5	cm³/1000 strokes	0,8	
1.6 Start	100	min. 67,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	750	1000	1500	2000
LDA=0,8 bar	mm	0,8-1,6(0,5-1,9)	2,5-3,3(2,7-3,6)	(5,3-6,7)	7,8-8,6(7,5-8,9)
2.2 Supply pump	n = rev/min	200	750	2000	
LDA=0,8 bar	bar (kgf/cm²)	1,4-2,0	3,4-4,0	7,1-7,7	
Overflow delivery	n = rev/min	500		2075	
	cm³/10 s	42-83 (27-98)		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2600	max. 1,0		0,8
	2300		(25,5-33,5)	0,8
	2200	39,5-45,5	(38,5-46,5)	0,8
	2000	51,0-53,0	(49,7-54,3)	0,8
	1500		(50,7-55,3)	0,8
	1000	48,5-51,5	(47,7-52,3)	0,8
	750*	46,1-47,1	(44,3-48,9)	0,25
	500		(38,8-44,8)	0
switch-off				
electr.	400	0		
Idle stop	500	max. 1,0		
	400	8,0-12,0	(6,0-14,0)	
	350		(18,0-26,0)	
End stop	230	min. 60		
	330	max. 60		

2.4 Solenoid		
	cut-in voltage	min. 22,0 V
		rated voltage 24,0 V

3. Dimensions

for assembly and adjustment

Designation	mm
K	
KF	K 1
MS	5,4 - 5,7
SVS	1,2 - 1,4
	4,6
XK	20,2 -22,2
XL	9,3 -12,6

Observations

* LDA-stroke 4,5 mm
Use adjusting nut (46) to correct. Pulling electro-magnet

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B23

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 SOF 2,5 k 1

1. Edition

En

VE 4/11 F 1900 R 127-1 Overflow temperature 45° C
0 460 414 026
DHK: 1 688 901 023/172 + 3 bar
Fuel injection test tubing 1 680 750 073 6x2x450 mm

supersedes -
company: Iveco-Sofim
engine: 8140.21.210

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-Injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1100	4,6 - 5,0	mm	1,0	
1.2 Supply-pump pressure	1100	5,1 - 5,7	bar (kgf/cm²)	1,0	
1.3 Full-load delivery with charge-air pressure	1100	44,7 - 45,7	cm³/1000 strokes	1,0	3,5 (4,0)
Full-load delivery without charge-air pressure	500	38,5 - 39,5	cm³/1000 strokes	0	
1.4 Idle regulation	400	13,0 - 17,0	cm³/1000 strokes	0	3,0 (4,0)
1.5 Full-speed regulation	2300	15,0 - 21,0	cm³/1000 strokes	1,0	
1.6 Start	100	min. 60,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	1100	-		0	

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	800	1100	1500	1900
LDA=1,0 bar	mm	2,8-3,6(2,5-3,9)	(4,1-5,5)	6,1-6,9(5,8-7,2)	7,6-8,4(7,3-8,7)
2.2 Supply pump	n = rev/min	600		1900	
LDA=1,0 bar	bar (kgf/cm²)	3,6-4,2		7,2-7,8	
Overflow delivery	n = rev/min	600		1900	
	cm³/10 s	42-83 (27-98)		55-198 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2450	max. 5,0		1,0
	2300		(13,5-22,5)	1,0
	2100	30,0-38,0	(29,5-38,5)	1,0
	1900	41,5-44,1	(40,2-45,4)	1,0
	1500	42,2-44,8	(40,9-46,1)	1,0
	1100		(42,6-47,8)	1,0
	900*	37,5-38,5	(35,4-40,6)	0,4
	500	50,8-54,3	(49,1-55,9)	1,0
	500		(35,6-42,4)	0
switch-off				
Idle stop	550	max. 5,0		
	400		(10,5-19,5)	
	350	27,0-33,0	(25,5-34,5)	
End stop	200	min. 70,0		
	350	mx. 70,0		

2.4 Solenoid — cut-in voltage: min. 22,0 V
rated voltage 24,0 V

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,2-5,4
MS	0,9-1,1
SVS	4,6
XK	17,0-19,0
XL	12,7-16,1

Observations

* LDA-stroke 6,2mm

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9.85

B24

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 3,9 y
4. Edition
En

Testoil-ISO 4113

VE 4/11 F 1150 R 140
0 460 414 009
DHK 1 688 901 020

Overflow temperature 45° C

Supersedes 7.84
company: IHC
engine: DT 239/856

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02 (0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	800	4,5 - 4,9	mm	0,8	
1.2 Supply-pump pressure	800	5,3 - 5,9	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	800	92,2-93,2	cm³/1000 strokes	0,8	3,5 (4,0)
Full-load delivery without charge-air pressure	500	75,5 - 77,5	cm³/1000 strokes	0	
1.4 Idle regulation	350	23,0 - 27,0	cm³/1000 strokes	0	3,5 (4,0)
1.5 Full-speed regulation	1270	22,0-28,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 100	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	800	1150
LDA = 0,8 bar	mm	0,8-1,6 (0,5-1,9)	(4,0 - 5,4)	5,3 - 6,1 (5,0 - 6,4)
2.2 Supply pump	n = rev/min	400		1150
LDA = 0,8 bar	bar (kgf/cm²)	3.7 - 4,3		6,4 - 7,0
Overflow delivery	n = rev/min	500		800
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1300	max. 2,5		0,8
	1270		(20,5-29,5)	0,8
	1230	71,0-79,0	(70,5-79,5)	0,8
	1130	85,4 - 88,4	(84,2-89,6)	0,8
	800		(90,0-95,4)	0,8
	800 *	86,4-90,4	(85,7-91,1)	0,3
	500	83,5-84,5	(80,6-87,4)	0,23
	500		(73,1-79,9)	0
switch-off				
Idle stop	350		(20,5-29,5)	
	400	5,0-11,0	(3,5-12,5)	
	450	max. 3,0		
End stop	220	min. 100		
	300	max. 80		

2.4 Solenoid	cut-in voltage	min. 10 V
		rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,2 - 5,4
MS	1,2 - 1,4
SVS	5,0
K	20,2 - 22,2
L	12,3 - 15,7

Observations
* LDA-stroke 4,9 mm
Use adjusting nut (46) to correct.

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C1

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 OPE 2,3 g
2. Edition
En

Testoil-ISO 4113

VE 4/10 F 2100 L 155
0 460 404 036

Overflow temperature 45° C

supersedes 10.84
company: Opel
engine: 2,3 TD

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	5,1-5,5	mm	0,8	
1.2 Supply-pump pressure	1500	5,0-5,6	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1200	58,5-59,5	cm³/1000 strokes	0,8	3,0
Full-load delivery without charge-air pressure	500	36,0-37,0	cm³/1000 strokes	0	
1.4 Idle regulation	290	13,5-17,5	cm³/1000 strokes	0	3,0
1.5 Full-speed regulation	2425	15,0-21,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 48,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	1500			0	

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	800	1200	1500	2100
	mm	1,5-2,3(1,2-2,6)	3,4-4,0(3,0-4,4)	(4,6-6,0)	7,9-8,7(7,6-9,
2.2 Supply pump	n = rev/min	500	1200	2100	
	bar (kgf/cm²)	2,7-3,3 (0 bar)	4,4-5,0(0,8 bar)	6,4-7,0 (0,8 bar)	
Overflow delivery	n = rev/min	500(0 bar)		2100 (0,8 bar)	
	cm³/10 s	55-138 (40-153)		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2550	max. 6,0		0,8
	2425		(13,5-22,5)	0,8
	2300	28,5-35,5	(27,5-36,5)	0,8
	2100	46,3-48,7	(44,8-50,1)	0,8
	1200		(56,3-61,6)	0,8
	800*	43,5-44,5	(41,3-46,6)	0,3
	500		(33,1-39,9)	0
switch-off	2100			
Idle stop	380	max. 2,5		
	320	7,0-13,0	(5,5-14,5)	
	290		(11,0-20,0)	
End stop	250	min. 50,0		
	400	max. 47,0		

2.4 Solenoid — cut-in voltage min. 10 V
rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	0,9-1,1
SVS	max.3,0

Observations

* Use adjusting nut (46 to correct.
LDA-stroke 6,2 mm
Hydr.-cold-start accel. (0 V)
300 min⁻¹ 2,2-3,8 mm
800 " 3,7-6,2 mm
1200 " max.6,2 mm

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C2

⑥

Test Specifications Distributor-type Fuel-injection Pumps

En

46

WPP 001/4 CUM 5,9 m
2. Edition

VE 6/12 F 1100 R 159 - 9
0 460 426 051 Overflow temperature 45° C
DHK: 1 688 901 016/207 + 3 bar

supersedes 1.85
company: Cummins
engine: 6 BT - 590

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	750	3,1-3,5	mm		
1.2 Supply-pump pressure	750	3,6-4,2	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure	900	81,5-82,5	cm³/1000 strokes		4,0 (4,5)
1.4 Idle regulation	375	27,0-33,0	cm³/1000 strokes		3,5 (4,5)
1.5 Full-speed regulation	1175	37,0-43,0	cm³/1000 strokes		
1.6 Start	100	min. 97,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	750	1100
	mm	1,3-2,1 (1,0-2,4)	(2,6-4,0)	5,6-6,4 (5,3-6,7)
2.2 Supply pump	n = rev/min	500		1100
	bar (kgf/cm²)	2,5-3,1		5,0-5,6
Overflow delivery	n = rev/min	500		1100
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1250	max. 1,5		
	1175		(35,0-45,0)	
	1100	77,0-80,0	(75,5-81,5)	
	900		(79,0-85,0)	
	750	83,0-87,0	(81,2-88,7)	
	500	82,5-86,5	(80,7-88,2)	
switch-off				
Idle stop	450	max. 1,5		
	375		(25,0-35,0)	
	300	56,0-64,0	(55,0-65,0)	
End stop	130	min. 97,0		
	240	max. 85,0		

2.4 Solenoid		
	cut-in voltage	min. 10 V
		rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,2-5,5
MS	1,4-1,65
SVS	1,2

Observations

Stop check electric shutoff device at 375 min/1

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C3

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 CUM 5,9 p
1. Edition
En

VE 6/12 F 1400 R 159-15
0 460 426 064
DHK: 1 688 901 027/250 + 3 bar
Fuel injection test tubing 1 680 750 017

Overflow temperature 45° C

supersedes -
company: CDC
engine: 6 BT - 5.9 93 kW

Test-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02(0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	850	3,8 - 4,2	mm		
1.2 Supply-pump pressure	850	3,9 - 4,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure			cm³/1000 strokes		
Full-load delivery without charge-air pressure	1100	56,5 - 57,5	cm³/1000 strokes		4,0 (4,5)
1.4 Idle regulation	350	11,0 - 17,0	cm³/1000 strokes		5,5
1.5 Full-speed regulation	1470	32,0 - 38,0	cm³/1000 strokes		
1.6 Start	100	min. 50,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	800	1100
	mm	1,5-2,3 (1,2-2,6)	(3,3-4,7)	5,4-6,2 (5,1-6,5)
2.2 Supply pump	n = rev/min	500		1100
	bar (kgf/cm²)	2,5 - 3,1		4,9 - 5,5
Overflow delivery	n = rev/min	500		1400
	cm³/10 s	42-83 (27-98)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1580	max. 2,0	
	1520	8,5-16,5 (7,5-17,5)	
	1470	(30,0-40,0)	
	1400	53,5-56,5 (52,0-58,0)	
	1100	(54,0-60,0)	
	850	52,5-56,5 (51,5-57,5)	
	500	39,0-47,0	
switch-off			
Idle stop	450	max. 4,0	
	350	(9,0-19,0)	
	300	33,0-41,0 (32,0-42,0)	
End stop	130	min. 60,0	
	400	max. 60,0	

2.4 Solenoid — cut-in voltage: min. 10 V
rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	-
KF	5,1-5,4
MS	1,4-1,6
SVS	0,8
XK	20,2-22,2
XL	10,8-14,2

Observations

Stop check electric shutoff device at 350 min/1

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C4

Test Specifications Distributor-type Fuel-injection Pumps

En

WPP 001/4 FIA 2,7 a 2
1. Edition

VE 3/11 F 1250 L 163-2 Overflow temperature 45° C
0 460 413 004
DHK: 1 688 901 020/172 + 3 bar

supersedes -
company: Fiat
engine: 8035.06.220

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02(0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	800	2,8 - 3,2	mm		
1.2 Supply-pump pressure	800	4,4 - 5,0	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	800	57,5 - 58,5	cm³/1000 strokes		3,5 (4,0)
Full-load delivery without charge-air pressure			cm³/1000 strokes		
1.4 Idle regulation	325	10,5 - 14,5	cm³/1000 strokes		3,5 (4,0)
1.5 Full-speed regulation	1350	37,0 - 43,0	cm³/1000 strokes		
1.6 Start	100	min. 80,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	800	1000
	mm	0,9-1,5 (0,5-1,9)	(2,3-3,7)	4,5-5,3 (4,2-5,6)
2.2 Supply pump	n = rev/min	500	1250	
	bar (kgf/cm²)	3,0 - 3,6	6,4 - 7,0	
Overflow delivery	n = rev/min	500	1250	
	cm³/10 s	42-83 (27-98)	55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1450	max. 1,0		
	1400	6,5-13,5	(5,5-14,5)	
	1350		(35,5-44,5)	
	1250	50,0-53,0	(48,8-54,2)	
	800		(55,3-60,7)	
	500	52,5-55,5	(50,6-57,4)	
-				
switch-off				
Idle stop	325		(8,0-16,5)	
	375	2,0- 8,0	(0,5-9,5)	
	450	max. 2,0		
End stop	150	min. 90,0		
	250	max. 50,0		

2.4 Solenoid — cut-in voltage: min. 10 V
rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,1-5,4
MS	1,5-1,7
SVS	4,3
XK	17,0-19,0
XL	14,5-17,9

Observations

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C5

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 3,6 c
1. Edition

En

VE 4/11 F 1250 L 164-2 Overflow temperature 45° C
0 460 414 024
DHK: 1 688 901 020/172 + 3 bar

supersedes -
company: Fiat-Iveco
engine: 8045.06.220

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02 (0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	800	3,0 - 3,4	mm		
1.2 Supply-pump pressure	800	4,1 - 4,7	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	800	63,5 - 64,5	cm³/1000 strokes		3,5 (4,0)
Full-load delivery without charge-air pressure	350	23,0 - 27,0	cm³/1000 strokes		3,5 (4,0)
1.4 Idle regulation	1350	32,0 - 38,0	cm³/1000 strokes		
1.5 Full-speed regulation	100	min. 90,0	cm³/1000 strokes		
1.6 Start	-				
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	800	1000	1250
	mm	1,2-2,0 (0,9-2,3)	(2,5-3,9)	4,9-5,5 (4,5-5,9)	5,4-6,2 (5,1-6,5)
2.2 Supply pump	n = rev/min	600		1250	
	bar (kgf/cm²)	3,2 - 3,8		6,1 - 6,7	
Overflow delivery	n = rev/min	500		1250	
	cm³/10 s	42-83 (27-98)		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1410	max. 3,0	
	1380	13,5-20,5 (12,5-21,5)	
	1350	(30,5-39,5)	
	1250	54,3-56,7 (52,8-58,2)	
	800	(61,3-66,7)	
	500	57,5-60,5 (55,6-62,4)	
-			
switch-off			
Idle stop	350	(20,5-29,5)	
	425	4,0-10,0 (2,5-11,5)	
	480	max. 2,5	
End stop	150	min. 100,0	
	250	max. 50,0	

2.4 Solenoid — cut-in voltage: min. 10 V, rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	-
KF	5,2-5,4
MS	1,5-1,7
SVS	4,0
XK	17,0-19,0
XL	13,5-16,9

Observations

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Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 5,5 K
2.Edition

En

Testoil-ISO 4113

VE 5/11 F 1250 R 165 Overflow temperature 45° C superseded: 6.84
0 460 415 005 company: Fiat-Iveco
DHK: 1 688 901 020 engine: 8055.05.200

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02 (0,04) mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	800	2,5-2,9	mm		
1.2 Supply-pump pressure	800	3,8-4,4	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure	800	70,0-71,0	cm³/1000 strokes		3,5 (4,0)
1.4 Idle regulation	300	16,0-20,0	cm³/1000 strokes		3,0 (4,0)
1.5 Full-speed regulation	1400	16,5-22,5	cm³/1000 strokes		
1.6 Start	100	min. 95	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	800	1200
	mm	0,6-1,4(0,3-1,7)	(2,0-3,4)	6,0-6,8(5,7-7,1)
2.2 Supply pump	n = rev/min	400		1200
	bar (kgf/cm²)	2,0-2,6		5,6-6,2
Overflow delivery	n = rev/min	500		1250
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1450	max. 2,0		
	1400		(15,0-24,0)	
	1360	42,5-49,5	(41,5-50,5)	
	1250	62,5-65,5	(61,3-66,7)	
	800		(67,9-73,1)	
	500	63,0-66,0	(61,1-67,9)	
switch-off	1250	0		
Idle stop	400	max. 2,0		
	350	8,0-14,0	(6,5-15,5)	
	300		(13,5-22,5)	
End stop	150	min. 95		
	250	max. 60		

2.4 Solenoid — cut-in voltage: min. 10 V, rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,2-5,4
MS	1,5-1,7
SVS	4,3
A XK	17,0-19,0
B XL	14,9-18,3

Observations

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C7

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 PEU 2,1 f
2. Edition

En

Testoil-ISO 4113

VE 4/9 F 2250 R 174 Overflow temperature 45° C
0 460 494 154
DHK: 1 6 88 901 022 / 130+ 3 bar
Fuel injection test tubing 6x2x450 mm

supersedes 1.85
company: PSA-Mahindra
engine: XD 4/90

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,8-4,2	mm		
1.2 Supply-pump pressure	1500	5,5-6,1	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	31,0-32,0	cm³/1000 strokes		2,5(3,0)
1.4 Idle regulation	350	7,0-11,0	cm³/1000 strokes		2,0(3,0)
1.5 Full-speed regulation	2400	11,0-17,0	cm³/1000 strokes		
1.6 Start	100	min. 50	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2200
	mm	1,6-2,4 (1,3-2,7)	(3,3-4,7)	6,4-7,2 (6,1-7,5)
2.2 Supply pump	n = rev/min	400	2200	
	bar (kgf/cm²)	2,0-2,6	7,4-8,0	
Overflow delivery	n = rev/min	2250		
	cm³/10 s	55-138 (40-153)		

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2500	max. 4,0	
	2400	(10,0-18,0)	
	2350	21,0-27,0 (20,0-28,0)	
	2200	34,0-37,0 (32,8-38,2)	
	2000	33,5-36,5 (32,3-37,7)	
	1500	(28,8-34,2)	
	1000	29,7-32,7 (28,2-34,2)	
	500	30,8-33,8(29,3-35,3)	
switch-off			
Idle stop	350	(5,0-13,0)	
	400	max. 4,0	
	550	max. 1,0	
End stop	350	min 40	
	450	min. 44	

2.4 Solenoid — cut-in voltage: min. 10 V, rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,2-1,4
SVS	2,5
A XK	20,2-22,2
B XL	12,0-15,4

Observations

C8

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BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

9.85

C8

Test Specifications Distributor-type Fuel-injection Pumps

Testoil-ISO 4113

VE 6/11 F 1250 R 181-1 Overflow temperature 45° C
0 460 416 046
DHK: 1 688 901 020

supersedes -
company: Fiat-Iveco
engine: 8065.05.290

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	4,7-5,1	mm		
1.2 Supply-pump pressure	1000	6,2-6,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1000	73,5-74,5	cm³/1000 strokes		3,5 (4,0)
1.4 Idle regulation	400	20,0-24,0	cm³/1000 strokes		3,5 (4,0)
1.5 Full-speed regulation	1380	21,0-27,0	cm³/1000 strokes		
1.6 Start	100	min. 110,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1000	1250
	mm	0,9-1,7(0,6-2,0)	(4,2-5,6)	5,3-6,1(5,0-6,4)
2.2 Supply pump	n = rev/min	200	600	1250
	bar (kgf/cm²)	2,0-2,6	4,6-5,2	7,2-7,8
Overflow delivery	n = rev/min	500		1250
	cm³/10 s	42-83(27-98)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1450	max. 2,0		
	1380		(19,5-28,5)	
	1330	48,5-55,5	(47,5-56,5)	
	1250	64,0-67,0	(62,8-68,2)	
	1000		(71,3-76,7)	
	600	68,5-71,5	(66,6-73,4)	
-				
switch-off	1250	0		
Idle stop	400		(17,5-26,5)	
	450	7,0-13,0	(5,5-14,5)	
End stop	150	min. 110,0		
	250	max. 85,0		

2.4 Solenoid	cut-in voltage	min. 22,0 V
		rated voltage 24,0 V

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,2-5,4
MS	1,5-1,7
SVS	4,3
XK	17,0-19,0
KL	13,5-16,9

Observations

C9

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C9

Test Specifications Distributor-type Fuel-injection Pumps

En

WPP 001/4 VWW 2,4 p
2. Edition

Testoil-ISO 4113

VE 6/10 F 2400 L 194
0 460 406 043

supersedes 3.85
company: VW
engine: 087T

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	1,5--1,9	mm	1,3	
1.2 Supply pump pressure	1500	5,7- 6,3	bar (kgf/cm²)	1,3	
1.3 Full-load delivery without charge-air pressure	1500	44,0-45,0	cm³/1000 strokes	1,3	max. 3,0
Full-load delivery with charge-air pressure	600	25,5-26,5	cm³/1000 strokes	0	
1.4 Idle speed regulation	415	6,0-10,0	cm³/1000 strokes	0	max. 3,0
1.5 Start	2675	10,0-16,0	cm³/1000 strokes	1,3	
1.6 Full-load speed regulation	100	min. 40,0	cm³/1000 strokes	0	
1.7 Load-dependent start of delivery					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min mm	See page 2	
2.2 Supply pump	n = rev/min bar (kgf/cm²)	See page 2	
Overflow delivery	n = rev/min cm³/10 s	600 (0 bar) 41-83(26-98)	2400 (1,3 bar) 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2825	max. 6,0		1,3
	2675		(9,0-17,0)	1,3
	2400	35,0-36,0	(33,8-38,2)	1,3
	1500		(42,3-46,7)	1,3
	1500	41,8-44,8	(41,1-45,5)	1,05
	1000 *	37,5-38,5	(35,8-40,2)	0,7
	600	35,5-38,5	(34,0-40,0)	1,3
	600		(23,0-29,0)	0
switch-off				
electr.	400	0		
Idle stop	415		(4,0-12,0)	
	750	max. 4,0		
EGR	1000	13,0-15,0	(10,0-18,0)	
end stop	400	min. 20		
	500	max. 30		

2.4 Solenoid	cut-in voltage	min. 10 Volt rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,4-6,6
MS	1,7-1,9
SVS	5,8
A	
B	

Observations

* ALDA-stroke = 6,0 mm

10.85

C10

CAO

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Settings timing device

Rot. speed rev/min	ALDA bar	Solenoid-operated valve V	Timing device travel mm
1200	1,3	12	0 - 0,8 (0 - 1,1)
1500	1,3	12	1,5 - 1,9 (1,0-2,4)
2400	1,3	12	5,4 - 6,2 (5,1-6,5)
600	1,3	0	1,7 - 3,3
1200	1,3	0	1,7 - 3,3
1500	1,3	0	2,5 - 4,1

Settings supply-pump pressure

600	1,3	12	3,3 - 3,9
1500	1,3	12	5,7 - 6,3
1500	1,3	0	6,3 - 7,3
2400	1,3	12	7,8 - 8,4

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,4 p 1
2. Edition
En

Testoil-ISO 4113

VE 6/10 F 2400 L 194-1 Overflow temperature 45° C
0 460 406 044

superseded 3.85
company: VW
engine: 087 T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	1,5- 1,9	mm	1,3	
1.2 Supply-pump pressure	1500	5,7- 6,3	bar (kgf/cm²)	1,3	
1.3 Full-load delivery with charge-air pressure	1500	44,0-45,0	cm³/1000 strokes	1,3	max. 3,0
Full-load delivery without charge-air pressure	600	25,5-26,5	cm³/1000 strokes	0	
1.4 Idle regulation	415	6,0-10,0	cm³/1000 strokes	0	max. 3,0
1.5 Full-speed regulation	2675	10,0-16,0	cm³/1000 strokes	1,3	
1.6 Start	100	min. 40,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min mm	See page 2
2.2 Supply pump	n = rev/min bar (kgf/cm²)	See page 2
Overflow delivery	n = rev/min cm³/10 s	600 (0 bar) 2400 (1,3 bar) 41-83(26-98) 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2825	max. 6,0		1,3
	2675		(9,0-17,0)	1,3
	2400	35,0-36,0	(33,8-38,2)	1,3
	1500		(42,3-46,7)	1,3
	1500	41,8-44,8	(41,1-45,5)	1,05
	1000*	37,5-38,5	(35,8-40,2)	0,7
	600	35,5-38,5	(34,0-40,0)	1,3
	600		(23,0-29,0)	0
switch-off				
mech.	2400	0		
Idle stop	415		(4,0-12,0)	
	715	max. 4,0		
EGR end stop	1000	13,0- 15,0	(10,0-18,0)	
	400	min. 20		
	500	max. 30		

2.4 Solenoid	cut-in voltage	min.10V rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,4-6,6
MS	1,7-1,9
SVS	5,8

Observations

* ALDA-stroke = 6,0 mm

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Settings timing device

Rot. speed rev/min	ALDA bar	Solenoid-operated valve V	Timing device travel mm
1200	1,3	12	0 - 0,8 (0 - 1,1)
1500	1,3	12	1,5 - 1,9 (1,0-2,4)
2400	1,3	12	5,4 - 6,2 (5,1-6,5)
600	1,3	0	1,7 - 3,3
1200	1,3	0	1,7 - 3,3
1500	1,3	0	2,5 - 4,1

Settings supply-pump pressure

600	1,3	12	3,3 - 3,9
1500	1,3	12	5,7 - 6,3
1500	1,3	0	6,3 - 7,3
2400	1,3	12	7,8 - 8,4

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 1,7 h2
2. Edition
En

Testoil-ISO 4113

VE 6/11 F 1500 R 196 Overflow temperature 45° C
0 460 416 042
DHK: 1 688 901 020/172 + 3 bar

supersedes 3.85
company: Fiat-Iveco
engine: 8060.05.200

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	3,8- 4,2	mm		
1.2 Supply-pump pressure	1000	5,4- 6,0	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	–		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1000	68,7-69,7	cm³/1000 strokes		3,5
1.4 Idle regulation	425	8,0-12,0	cm³/1000 strokes		4,0
1.5 Full-speed regulation	1600	45,0-51,0	cm³/1000 strokes		
1.6 Start	100	min. 76,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	700	1000	1400
	mm	0,5-1,3(0,2-1,6)	(2,7-4,1)	6,2-7,0(5,9-7,3)
2.2 Supply pump	n = rev/min	200	700	1500
	bar (kgf/cm²)	1,5-2,1	4,2-4,8	7,2-7,8
Overflow delivery	n = rev/min	600		1500
	cm³/10 s	41-83(26-98)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1730	max. 2,0		
	1650	34,5-41,5	(33,5-42,5)	
	1600		(43,5-52,5)	
	1500	64,5-67,5	(63,3-68,7)	
	1000		(66,5-71,9)	
	600	57,0-60,0	(55,1-61,9)	
switch-off				
Idle stop	425		(5,5-14,5)	
	500	max. 2,0		
End stop	200	min. 80		
	300	max. 32		

2.4 Solenoid — max. cut-in voltage / test voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,9-2,1
SVS	
A XK	17,0-19,0
B XL	10,6-14,0

Observations

24 V Pulling electromagnet

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C14

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 CUM 5,9 r

1. Edition

En

VE 6/12 F 1325 R 198
0 460 426 063 Overflow temperature 45° C
DHK: 1 688 901 027/250 + 3 bar
Fuel injection test tubing 1 680 750 017

supersedes
company: CDC
engine: 6 BT 5,9 97 kW

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02(0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	850	3,9-4,3	mm		
1.2 Supply-pump pressure	850	3,9-4,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1100	56,0-57,0	cm³/1000 strokes		4,0 (4,5)
1.4 Idle regulation	375	7,0-13,0	cm³/1000 strokes		3,5 (4,5)
1.5 Full-speed regulation	1400	36,0-42,0	cm³/1000 strokes		
1.6 Start	100	min. 60,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	850	1100
	mm	1,3-2,1(1,0-2,4)	(3,4-4,8)	5,9-6,7(5,6-7,0)
2.2 Supply pump	n = rev/min	500		1100
	bar (kgf/cm²)	2,5-3,1		4,9-5,5
Overflow delivery	n = rev/min	500		1325
	cm³/10 s	42-83(27-98)		55-138(40-153)

2.3 Delivery

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press.
End stop	1520	max. 2,0		
	1460	10,5-18,5	(9,5-19,5)	
	1400		(34,0-44,0)	
	1325	52,5-55,5	(51,0-57,0)	
	1100		(53,5-59,5)	
	850	53,5-57,5	(52,5-58,5)	
	500	40,5-44,5	(38,7-46,3)	
switch-off				
Idle stop	300	41,0-49,0	(40,0-50,0)	
	375		(5,0-15,0)	
	450	max. 4,0		
End stop	130	min. 65,0		
	250	max. 65,0		

2.4 Solenoid — cut-in voltage: min. 10,0 V
~~rated voltage 12 V.~~

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,2-5,4
MS	1,4-1,6
SVS	1,3
KK	20,2-22,2
XL	9,1-12,5

Observations

Stop check electric shutoff device at 375 min/1

C15

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10.85

C15

Test Specifications Distributor-type Fuel-injection Pumps

En

VE 4/9 F 2250 R 187

0 460 494 164

Overflow temperature 45° C

supersedes -
company: VWW
engine: 086 - 1,7 Typ 2

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,3-4,7	mm		
1.2 Supply-pump pressure	1500	4,8-5,4	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	35,5-36,5	cm³/1000 strokes		2,5 (3,0)
1.4 Idle regulation	415	6,0-10,0	cm³/1000 strokes		2,0 (3,0)
1.5 Full-speed regulation	2525	12,0-18,0	cm³/1000 strokes		
1.6 Start	100	min. 35,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2250
	mm	2,1-2,9(1,8-3,2)	(3,8-5,2)	7,4-8,2(7,1-8,5)
2.2 Supply pump	n = rev/min	600	2250	
	bar (kgf/cm²)	2,5-3,1	6,7-7,3	
Overflow delivery	n = rev/min	600	2250	
	cm³/10 s	55-138(40-153)	55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2675	max. 6,0		
	2525		(11,0-19,0)	
	2475	17,0-27,0	(17,0-27,0)	
	2250	31,5-33,5	(30,2-34,8)	
	1500		(33,7-38,3)	
	600	25,0-28,0	(23,5-29,5)	
-				
switch-off				
electr.	400	0		
Idle stop	415		(4,0-12,0)	
	1200	max. 4,0		
End stop	400	min. 22,5		
	500	max. 29,5		

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12 V.

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	4,8

Observations

C16

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C16

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 5,6 m
1. Edition
En

Testoil-ISO 4113

VE 6/12 F 1400 R 199-1
0 460 426 062 Overflow temperature 45° C

supersedes -
company: MAN
engine: D 0226 MLE

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	800	3,1 - 3,5	mm		
1.2 Supply-pump pressure	800	5,2 - 5,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1000	132,5-133,5	cm³/1000 strokes		4,0
1.4 Idle regulation	300	15,0 - 21,0	cm³/1000 strokes		3,5
1.5 Full-speed regulation	1480	92,0 -100,0	cm³/1000 strokes		
1.6 Start	100	min. 90,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	800	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	800	1100	1400
	mm	1,4-2,2(1,1-2,5)	(2,6-4,0)	4,1-4,9(3,8-5,2)	4,5-5,3(4,2-5,6)
2.2 Supply pump	n = rev/min	200		1400	
	bar (kgf/cm²)	2,3 - 2,9		7,3 - 7,9	
Overflow delivery	n = rev/min	400			
	cm³/10 s	42-83 (27-98)		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1650	max. 2,0	
	1600	6,0-14,0 (5,0-15,0)	
	1480	(91,0-101,0)	
	1400	123,5-126,5 (122,0-128,0)	
	1000	(130,0-136,0)	
	630	130,0-134,0 (128,2-135,8)	
switch-off			
Idle stop	300	(13,0-23,0)	
	350	1,0-7,0	
	400	max. 2,0	
End stop	380	min. 120,0	
	430	max. 135,0	

2.4 Solenoid — max. cut-in voltage / test voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,7-5,9
MS	1,0-1,2
SVS	2,0
A	
B	

Observations

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C17

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,4 r
1. Edition
En

Testoil-ISO 4113

VE 6/10 F 1500 L 201
0 460 406 045

Overflow temperature 45° C

supersedes -
company: VWW
engine: 08/ T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1480	1,4 - 1,8	mm	0,75	
1.2 Supply-pump pressure	1480	4,7 - 5,3	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	1480	38,5 - 39,5	cm³/1000 strokes	0,75	2,5 (3,0)
Full-load delivery without charge-air pressure	600	21,5 - 22,5	cm³/1000 strokes	0	
1.4 Idle regulation	375	6,0 - 10,0	cm³/1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	1570	9,0 - 15,0	cm³/1000 strokes	0,75	
1.6 Start	100	min. 35	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1200	1480
	mm	0,1-0,9 (0-1,2)	(0,9-2,3)
LDA=0,75 bar 2.2 Supply pump	n = rev/min	600	
	bar (kgf/cm²)	2,4 - 3,0	
LDA=0,75 bar Overflow delivery	n = rev/min	600	1480 (0,75 bar)
	cm³/10 s	42-83 (27-98)	55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1625	max. 3,0		0,75
	1570		(8,0-16,0)	0,75
	1480		(36,7-41,3)	0,75
	/50*	29,0-30,0	(26,5-32,5)	0,30
	600	33,0-36,0	(31,5-37,5)	0,75
	600		(19,0-25,0)	0
switch-off				
electr.	400	0		
Idle stop	450	max. 3,0		0
	375		(4,0-12,0)	0
End stop	400	min. 18		
	500	max. 25		

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2 - 3,4
KF	6,3 - 6,6
MS	1,0 - 1,2
SVS	3,8
A XK	18,8-20,8
B XL	11,8-15,2

Observations

* LDA-stroke 4,5 mm
Use adjusting nut (46) to correct.

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C18

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,4 r 1
1. Edition
En

Testoil-ISO 4113

VE 6/10 F 2000 L 201-2 Overflow temperature 45° C
0 460 406 046

supersedes -
company: VWW
engine: 087 T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-480/..

Pre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	1,5 - 1,9	mm	0,75	
1.2 Supply-pump pressure	1500	4,8 - 5,4	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	1500	38,0 - 39,0	cm³/1000 strokes	0,75	2,5 (3,0)
Full-load delivery without charge-air pressure	600	21,5 - 22,5	cm³/1000 strokes	0	
1.4 Idle regulation	375	6,0 - 10,0	cm³/1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2100	9,0 - 15,0	cm³/1000 strokes	0,75	
1.6 Start	100	min. 35,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	750	1500	1980
LDA=0,75 bar	mm	0,1-0,9 (0-1,2)	(1,0-2,4)	3,1-3,9 (2,8-4,2)
2.2 Supply pump	n = rev/min	600		1980
LDA=0,75 bar	bar (kgf/cm²)	2,4 - 3,0		6,1 - 6,7
Overflow delivery	n = rev/min	600		1980 (0,75 bar)
	cm³/10 s	42-83 (27-98)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2200	max. 3,0		0,75
	2100		(8,0-16,0)	0,75
	1980	33,5-35,5	(32,2-36,8)	0,75
	1500		(36,2-40,8)	0,75
	750*	29,0-30,0	(27,2-31,8)	0,30
	600	33,0-36,0	(31,5-37,5)	0,75
	600		(19,0-25,0)	0
switch-off				
electr.	400	0		
Idle stop	450	max. 3,0		
	375		(4,0-12,0)	
End stop	400	min. 18,0		
	500	max. 25,0		

2.4 Solenoid — cut-in voltage: min. 10,0 V, rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,4-6,6
MS	1,0-1,2
SVS	3,8
AXK	18,8-20,8
BXL	9,8-13,2

Observations

* LDA-stroke 4,5 mm
Use adjusting nut (46) to correct.

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C19

Test Specifications Distributor-type Fuel-injection Pumps

En

Testoil-ISO 4113

VE 4/9 F 2125 L 208 Overflow temperature 45° C

0 460 494 169

supersedes -
company: KIA
engine: S2 44 kW

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	4,9-5,3	mm		
1.2 Supply-pump pressure	1400	4,8-5,4	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1400	38,8-39,8	cm³/1000 strokes		2,5 (3,0)
1.4 Idle regulation	300	8,0-12,0	cm³/1000 strokes		2,0 (3,0)
1.5 Full-speed regulation	2300	20,0-26,0	cm³/1000 strokes		
1.6 Start	100	min. 50,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	800	1400	1800
	mm	1,2-2,0(0,9-2,3)	(4,4-5,8)	7,3-8,1(7,0-8,4)
2.2 Supply pump	n = rev/min	500		1800
	bar (kgf/cm²)	1,8-2,4		6,1-6,7
Overflow delivery	n = rev/min	500		2125
	cm³/10 s	42-83(27-98)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2600	max. 2,0		
	2450	3,0-9,0	(2,0-10,0)	
	2300		(19,0-27,0)	
	2100	33,6-35,6	(32,3-36,9)	
	1400		(37,0-41,6)	
	800	33,8-36,8	(33,0-37,6)	
	500	31,5-34,5	(30,0-36,0)	
switch-off				
Idle stop	300		(6,0-14,0)	
	350	1,0-5,0		
End stop	200	min. 45,0		
	300	max. 45,0		

2.4 Solenoid		
	cut-in voltage	min. 10,0 V
		rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,5-1,7
SVS	3,6
XK	17,0-19,0
XL	13,3-16,7

Observations

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung
1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

C20

Test Specifications Distributor-type Fuel-injection Pumps

VE 6/12 F 1150 R 225-4
0 460 426 071 Overflow temperature 45° C
DHK: 1 688 901 027/250 + 3 bar
Fuel injection test tubing 1 680 750 017

supersedes-
company: CDC
engine: 6 BT - 5.9

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	750	4,5-4,9	mm		
1.2 Supply-pump pressure	750	3,8-4,4	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	900	72,0-73,0	cm³/1000 strokes		4,0
1.4 Idle regulation	375	8,0-14,0	cm³/1000 strokes		5,5
1.5 Full-speed regulation	1190	54,0-60,0	cm³/1000 strokes		
1.6 Start	100	min. 60,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	750	900
	mm	1,7-2,5(1,4-2,8)	(4,0-5,4)	5,2-6,0(4,9-6,3)
2.2 Supply pump	n = rev/min	400	900	1150
	bar (kgf/cm²)	2,3-2,9	4,4-5,0	5,4-6,0
Overflow delivery	n = rev/min	500		1150
	cm³/10 s	42-83(27-98)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1300	max. 2,0		
	1240	21,0-29,0	(20,0-30,0)	
	1190		(52,0-62,0)	
	1150	66,5-69,5	(65,0-71,0)	
	900		(69,5-75,5)	
	750	70,5-74,5	(69,5-75,5)	
	500	54,0-62,0	(54,0-62,0)	
switch-off				
Idle stop	300	31,5-40,5	(31,5-40,5)	
	375		(6,5-15,5)	
	450	max. 4,0		
End stop	130	min. 70,0		
	240	max. 60,0		

2.4 Solenoid — cut-in voltage: min. 10 V, rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,2-5,4
MS	0,9-1,1
SVS	0,6
XK	20,2-22,2
XL	11,5-14,9

Observations

Stop check electric shutoff device at 375 min/1

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Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 LOM 3,7 a
2. Edition
En

PES 4 A 80 D 420 LS 1345 RSV 350-1300 A5B 2183 R
Komb.-Nr. 0 400 474 160 " A5C 2183 R

superseded 10.83
company Lombardini
engine LDA 934

Tastoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,7-2,8 (2,65-2,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,5-9,6	6,0-6,1	0,25 (0,4)			
350	6,4-6,6	0,7-1,3	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	- - -	ca. 17	350	6,0	-	-
	x = 3,0				100	min. 19,5		
					350	6,4-6,6		
ca. 51 (2a)	8,5	1290-1300			425-485	= 2,0		
	4,0	1350-1380						
	1490	0,3-1,7						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1250	60,0-61,0 (58,5-62,5)	1290-1300*	-	-	100	118,0-128,0 (115,0-131,0) = 19,5 - 21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

5.85

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C22

(1A)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 m 1
2. Edition

En

PES 6 A 80 D 410 RS 2085X RSV350-1400A2B1052DL
Komb.-Nr. 0 400 876 188 A2C1052 L

superseded 8.81
company Daimler-Benz
engine OM 352
81 kW (110 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,1-2,3) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	9,0-9,1	5,2 - 5,3	0,2(0,35)			
350	6,8-7,0	0,9 - 1,5	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	loose	350	6,9	1400	9,0-9,1
	x =	4,0					100	min.19,0	500	9,8-9,9
							350	6,8-7,0	750	9,6-9,8
ca.50 (5)	8,2	1440-1450					600-660	=2,0mm	950	9,1-9,4
	4,0	1515-1545								
	1680	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...						Control rod travel
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	7	rev/min 8	mm 9
1400	52,0 - 53,0 (50,5 - 54,5)	1440-1450	500	46,0 - 48,0 (44,0 - 50,0)	100	78,0 - 88,0 = 14,2-14,6 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.85

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C23

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAN 9,7 1 3
En 4. Edition

Testoil-ISO 4113

PES 6 A 95 D 410 RS 2108 R
Komb.-Nr. 0 400 876 304

RSV 550-1100 A 1 B 607 L
A 1 C 607 L

supersedes 5.84
company MAN-RABA
engine D 2356 HM6
50 kW (204 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7-1,8 (1,65-1,85) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1080	12,7+0,1	11,5 - 11,7	0,35(0,6)			
550	6,4 -6,6	1,1 - 1,7	0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.25	550	6,0	1080	12,7+0,1
ca.50	X	= 3,25					100	min.19,5	400	12,7+0,2
(5)	1120-1130=11,7						550	6,4-6,6	250	13,9+0,6
	1170-1200= 4,0						725	max. 1,0		
	1330 = 0,3-1,7						625-685	2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery Idle		(5a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note: changed to ... rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	7	rev/min 8	Control rod travel mm 9
1080	114,5-116,5 (112,5-118,5)	1140-1150*	700	110,0-113,0 (108,0-115,0)	-	-	-	-
			500	max. 112,0 (max. 114,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

7.85

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C24

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MWM 1,5 c

7. Edition

En

Testoil-ISO 4113

PES 2 A 75 80 D..RS1235,1252,1298
3 ..RS1236,1239,1299
4 ..RS1237,1246,1276,1301
6 ..RS1238,1302

EP/RSV 300-1000 A7C505 R A7B505DR

EP/RSV 325-1500 A2C505 R A2B505DR

supersedes 3.84

company: M W M

engine: D 208 - D 308 - D 225 - D 325 - D 226 - D 327 - 2..6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery "C" und "D" cm³/100 strokes 3 7,5 Ø	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery "C" und "D" cm³/100 strokes 3 8 Ø	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,2 - 6,6	0,4	9	4,1 - 4,5	
	9	3,2 - 3,7		6	1,2 - 2,0	
200	9	2,1 - 2,8		9	2,7 - 3,7	

Adjust the fuel delivery from each outlet according to the values in [ ]

As from FD 823 the idle auxiliary-spring has been changed from 1 424 641 000 to ... 001. New values enclosed.

B. Governor Settings

300-1000

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.68	1000	16,0	without auxiliary spring			ca.25	300	7,0	-	-
	1050	8,5					100	min.19,5		
	1100	2,4					300	7,4-7,6		
ca.67 (5)	1030	8,0-9,0					390-450	2,0		
	1070	2,0-4,0	with auxiliary spring							
	1120	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
page	3 - 33 !							

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.85

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B. Governor Settings

325-1500

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.58	1500 1580 1630	16,0 9,0 4,2	without auxiliary spring			ca.16	325 100 325 445-505	7,0 min.19,5 7,4-7,6 =2,0	-	-
ca.56 (5)	1530 1580 1720	8,0-9,0 3,0-4,0 0,3-1,0	with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to rev/min						Control rod travel mm
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
page	3 - 33 !		(6a)		100	95,0-105,0 (92,0-108,0) = 19,5-21,0 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

The rating plate mentioned described on MM 1.5 a has recently been modified to enable more precise adjustment on governors with torque control. The modification was carried out in columns n = engine speed and Q = (full-load quantity). Testing was extended to two speeds and two quantities.

Deviating from the instructions WPP 001/4, 1. Supplement "Adjustment of the governor and the pump", the following points now apply:

(2) Adjustment as per rating plate n = 1 (1st speed) and Q = (1st quantity; or according to columns 1 and 2.

(3) Adjustment is carried out until the control-rod travel changes, as read under (2), or (with the new rating plate) until the 2nd quantity is reached at the second speed; or as per columns 4 and 5.

(6) Is to be adjusted as per rating plate n = (1st speed + 20 min^{-1}); or as per column 3.

In the case of repairs to Fendt tractors on which the new rating plate has not yet been attached (2nd speed and 2nd quantity), the full-load data applies, listed as per engine types, in accordance with the above instructions.

With new replacement pumps delivered from the Stuttgart warehouse, the spring retainer is not fitted! Order from MWM Co using the old rating plate.

Full-load data for Fendt tractors - Engine D 208/308

Only valid for engines with pumps PES 3 A 75 C 320/3 RS 1236 and 9
PES 4 A 75 C 320/3 RS 1237

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

Fendt tractors- Output at speed - Engine and tractor type per-

32 PS / 2100 min^{-1} - D 208 - 3 - Farmer 2 D -

1050	36,0 - 37,0	1070	700	39,0 - 41,0

32 PS / 1050 min^{-1} - D 308 - 3 - 231 GT -

975	36,0 - 37,0	990	700	39,0 - 41,0

38 PS / 2600 min^{-1} - D 208 - 3 - Farmer 2 -

1300	35,0 - 36,0	1320	700	36,0 - 38,0

55 PS / 2400 min^{-1} - D 208 - 4 - Farmer 4 S -

1200	41,0 - 42,0	1220	700	42,0 - 44,0

General fitting - Output at speed

D 208 - 2

F 31 PS / 3000 min^{-1}

1500	41,5 - 43,5	1520

B 30 PS / 3000 min^{-1}

1500	39,5 - 41,5	1520

A 28 PS / 3000 min^{-1}

1500	41,5 - 43,5	1520

F 30 PS / 2800 min^{-1}

1400	41,5 - 43,5	1420

B 29 PS / 2800 min^{-1}

1400	40,0 - 42,0	1420

A 27 PS / 2800 min^{-1}

1400	41,5 - 43,5	1420

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 29 PS / 2600 min^{-1}								
1300	43,0 - 45,0	1320						
B 28 PS / 2600 min^{-1}								
1300	41,0 - 43,0	1320						
A 26 PS / 2600 min^{-1}								
1300	42,5 - 44,5	1320						
F 28 PS / 2500 min^{-1}								
1250	42,5 - 44,5	1270						
B 27 PS / 2500 min^{-1}								
1250	40,5 - 42,5	1270						
A 25 PS / 2500 min^{-1}								
1250	41,5 - 43,5	1270						
F 27 PS / 2400 min^{-1}								
1200	42,0 - 44,0	1220						
B 26 PS / 2400 min^{-1}								
1200	40,0 - 42,0	1220						
A 24 PS / 2400 min^{-1}								
1200	41,0 - 43,0	1220						
F 26 PS / 2300 min^{-1}								
1150	41,5 - 43,5	1170						
B 25 PS / 2300 min^{-1}								
1150	39,5 - 41,5	1170						
A 23 PS / 2300 min^{-1}								
1150	40,5 - 42,5	1170						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 25 PS / 2200 min^{-1}								
1100	41,0 - 43,0	1120						
B 24 PS / 2200 min^{-1}								
1100	39,0 - 41,0	1120						
A 22 PS / 2200 min^{-1}								
1100	40,0 - 42,0	1120						
F 24 PS / 2100 min^{-1}								
1050	40,5 - 42,5	1060						
B 23 PS / 2100 min^{-1}								
1050	38,0 - 40,0	1060						
A 21 PS / 2100 min^{-1}								
1050	39,0 - 41,0	1060						
F 23 PS / 2000 min^{-1}								
1000	39,0 - 41,0	1010						
B 22 PS / 2000 min^{-1}								
1000	37,0 - 39,0	1010						
A 20 PS / 2000 min^{-1}								
1000	38,0 - 40,0	1010						
B 20 PS / 1800 min^{-1}								
900	36,0 - 38,0	910						
A 18 PS / 1800 min^{-1}								
900	36,5 - 38,5	910						
B 16 PS / 1500 min^{-1}								
750	34,0 - 36,0	760						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
A 15 PS / 1500 min^{-1}								
750	36,0 - 38,0	760						

Testoil-ISO 4113

Checking values in brackets

• 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

(1)

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F) rev/min 1	 cm³/1000 strokes 2	Rotational-speed limitation rev/min 3	Fuel delivery characteristics rev/min 4	 cm³/1000 strokes 5	Starting fuel delivery Idle switching point rev/min 6	 cm³/1000 strokes 7	Intermediate rotational speed Torque-control travel rev/min 8	 mm
F 46,5 PS / 3000 min⁻¹								
1500	42,0 - 44,0	1520						
B 45 PS / 3000 min⁻¹								
1500	39,0 - 41,0	1520						
A 42 PS / 3000 min⁻¹								
1500	40,5 - 42,5	1520						
F 45 PS / 2800 min⁻¹								
1400	42,0 - 44,0	1420						
B 43,5 PS / 2800 min⁻¹								
1400	39,0 - 41,0	1420						
A 40,5 PS / 2800 min⁻¹								
1400	40,0 - 42,0	1420						
F 43,5 PS / 2600 min⁻¹								
1300	41,5 - 43,5	1320						
B 42 PS / 2600 min⁻¹								
1300	39,5 - 41,5	1320						
A 39 PS / 2600 min⁻¹								
1300	40,0 - 42,0	1320						
F 42 PS / 2500 min⁻¹								
1250	40,5 - 42,5	1270						
B 40,5 PS / 2500 min⁻¹								
1250	38,5 - 40,5	1270						
A 37,5 PS / 2500 min⁻¹								
1250	39,5 - 41,5	1270						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 40,5 PS / 2400 min^{-1}								
1200	40,5 - 42,5	1220						
B 39 PS / 2400 min^{-1}								
1200	38,5 - 40,5	1220						
A 36 PS / 2400 min^{-1}								
1200	39,5 - 41,5	1220						
F 39 PS / 2300 min^{-1}								
1150	39,5 - 41,5	1170						
B 37,5 PS / 2300 min^{-1}								
1150	38,0 - 40,0	1170						
A 34,5 PS / 2300 min^{-1}								
1150	38,0 - 40,0	1170						
F 37,5 PS / 2200 min^{-1}								
1100	38,5 - 40,5	1120						
B 36 PS / 2200 min^{-1}								
1100	36,5 - 38,5	1120						
A 33 PS / 2200 min^{-1}								
1100	38,0 - 40,0	1120						
F 36 PS / 2100 min^{-1}								
1050	38,0 - 40,0	1060						
B 34,5 PS / 2100 min^{-1}								
1050	36,0 - 38,0	1060						
A 31,5 PS / 2100 min^{-1}								
1050	36,0 - 38,0	1060						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 34,5 PS / 2000 min^{-1}								
1000	37,0 - 39,0	1010						
B 33 PS / 2000 min^{-1}								
1000	35,5 - 37,5	1010						
A 30 PS / 2000 min^{-1}								
1000	37,0 - 39,0	1010						
3 30 PS / 1800 min^{-1}								
900	34,0 - 36,0	910						
A 27 PS / 1800 min^{-1}								
900	35,0 - 37,0	910						
B 24 PS / 1500 min^{-1}								
750	33,0 - 35,0	760						
A 22,5 PS / 1500 min^{-1}								
750	36,0 - 38,0	760						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 62 PS / 3000 min^{-1}								
1500	40,5 - 42,5	1520						
B 60 PS / 3000 min^{-1}								
1500	39,0 - 41,0	1520						
A 56 PS / 3000 min^{-1}								
1500	40,0 - 42,0	1520						
F 60 PS / 2800 min^{-1}								
1400	40,0 - 42,0	1420						
B 58 PS / 2800 min^{-1}								
1400	35,5 - 37,5	1420						
A 54 PS / 2800 min^{-1}								
1400	40,0 - 42,0	1420						
F 53 PS / 2600 min^{-1}								
1300	40,0 - 42,0	1320						
B 56 PS / 2600 min^{-1}								
1300	38,0 - 40,0	1320						
A 52 PS / 2600 min^{-1}								
1300	39,0 - 41,0	1320						
F 56 PS / 2500 min^{-1}								
1250	39,0 - 41,0	1270						
B 54 PS / 2500 min^{-1}								
1250	37,5 - 39,5	1270						
A 50 PS / 2500 min^{-1}								
1250	39,0 - 41,0	1270						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 54 PS / 2400 min^{-1}								
1200	39,0 - 41,0	1220						
B 52 PS / 2400 min^{-1}								
1200	37,5 - 39,5	1220						
A 48 PS / 2400 min^{-1}								
1200	38,0 - 40,0	1220						
F 52 PS / 2300 min^{-1}								
1150	38,0 - 40,0	1170						
B 50 PS / 2300 min^{-1}								
1150	36,5 - 38,5	1170						
A 46 PS / 2300 min^{-1}								
1150	37,5 - 39,5	1170						
F 50 PS / 2200 min^{-1}								
1100	39,0 - 41,0	1120						
B 48 PS / 2200 min^{-1}								
1100	37,0 - 39,0	1120						
A 44 PS / 2200 min^{-1}								
1100	38,0 - 40,0	1120						
F 48 PS / 2100 min^{-1}								
1050	37,5 - 39,5	1060						
B 46 PS / 2100 min^{-1}								
1050	35,5 - 37,5	1060						
A 42 PS / 2100 min^{-1}								
1050	36,0 - 38,0	1060						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 46 PS / 2000 min^{-1}								
1000	38,0 - 40,0	1010						
B 44 PS / 2000 min^{-1}								
1000	35,5 - 37,5	1010						
A 40 PS / 2000 min^{-1}								
1000	36,0 - 38,0	1010						
B 40 PS / 1800 min^{-1}								
900	34,5 - 36,5	910						
A 36 PS / 1800 min^{-1}								
900	34,0 - 36,0	910						
B 32 PS / 1500 min^{-1}								
750	30,5 - 32,5	760						
A 30 PS / 1500 min^{-1}								
750	33,0 - 35,0	760						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 93 PS / 3000 min^{-1}								
1500	39,5 - 41,5	1520						
B 90 PS / 3000 min^{-1}								
1500	38,0 - 40,0	1520						
A 84 PS / 3000 min^{-1}								
1500	39,0 - 41,0	1520						
F 90 PS / 2800 min^{-1}								
1400	39,5 - 41,5	1420						
B 87 PS / 2800 min^{-1}								
1400	38,0 - 40,0	1420						
A 81 PS / 2800 min^{-1}								
1400	39,0 - 41,0	1420						
F 87 PS / 2600 min^{-1}								
1300	39,5 - 41,5	1320						
B 84 PS / 2600 min^{-1}								
1300	38,0 - 40,0	1320						
A 78 PS / 2600 min^{-1}								
1300	38,5 - 40,5	1320						
F 84 PS / 2500 min^{-1}								
1250	39,0 - 41,0	1270						
B 81 PS / 2500 min^{-1}								
1250	37,0 - 39,0	1270						
A 75 PS / 2500 min^{-1}								
1250	38,0 - 40,0	1270						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 81 PS / 2400 min^{-1}								
1200	38,0 - 40,0	1220						
B 78 PS / 2400 min^{-1}								
1200	36,5 - 38,5	1220						
A 72 PS / 2400 min^{-1}								
1200	38,0 - 40,0	1220						
F 78 PS / 2300 min^{-1}								
1150	38,0 - 40,0	1170						
B 75 PS / 2300 min^{-1}								
1150	36,5 - 38,5	1170						
A 69 PS / 2300 min^{-1}								
1150	37,0 - 39,0	1170						
F 75 PS / 2200 min^{-1}								
1100	38,0 - 40,0	1120						
B 72 PS / 2200 min^{-1}								
1100	36,0 - 38,0	1120						
A 66 PS / 2200 min^{-1}								
1100	37,0 - 39,0	1120						
F 72 PS / 2100 min^{-1}								
1050	37,0 - 39,0	1060						
B 69 PS / 2100 min^{-1}								
1050	35,5 - 37,5	1060						
A 63 PS / 2100 min^{-1}								
1050	36,0 - 38,0	1060						

Testoil ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 69 PS / 2000 min^{-1}								
1000	36,5 - 38,5	1010						
B 66 PS / 2000 min^{-1}								
1000	34,5 - 36,5	1010						
A 60 PS / 2000 min^{-1}								
1000	35,0 - 37,0	1010						
B 60 PS / 1800 min^{-1}								
900	33,5 - 35,5	910						
A 54 PS / 1800 min^{-1}								
900	34,0 - 36,0	910						
B 48 PS / 1500 min^{-1}								
750	31,0 - 33,0	760						
A 45 PS / 1500 min^{-1}								
750	33,0 - 35,0	760						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 35,5 PS / 3000 min^{-1}								
1500	55,0 - 57,0	1520	800	52,5 - 55,5				
A 32 PS / 3000 min^{-1}								
1500	51,0 - 53,0	1520						
F 41 PS / 2800 min^{-1}								
1400	66,5 - 68,5	1420	800	55,5 - 58,5				
F 38,5 PS / 2500 min^{-1}								
1250	62,5 - 64,5	1270	800	55,5 - 58,5				
B 37 PS / 2500 min^{-1}								
1250	59,5 - 61,5	1270	800	52,5 - 55,5				
A 34 PS / 2500 min^{-1}								
1250	55,5 - 57,5	1270						
F 36,5 PS / 2300 min^{-1}								
1150	60,5 - 62,5	1170	800	55,5 - 58,5				
B 35 PS / 2300 min^{-1}								
1150	58,5 - 60,5	1170	800	52,5 - 55,5				
A 32 PS / 2300 min^{-1}								
1150	53,0 - 55,0	1170						
F 33 PS / 2000 min^{-1}								
1000	58,5 - 60,5	1010	750	55,0 - 58,0				
B 31 PS / 2000 min^{-1}								
1000	55,0 - 57,0	1010	750	52,5 - 55,5				
A 28,5 PS / 2000 min^{-1}								
1000	50,0 - 52,0	1010						

Testoil ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 28,5 PS / 1800 min^{-1}								
900	52,5 - 54,5	910	750	52,0 - 55,0				
A 26 PS / 1800 min^{-1}								
900	48,0 - 50,0	910						
B 24 PS / 1500 min^{-1}								
750	46,5 - 48,5	760	750	50,5 - 53,5				
A 22 PS / 1500 min^{-1}								
750	51,0 - 53,0	760						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 53 PS / 3000 min^{-1}								
1500	54,5 - 56,5	1520	800	51,0 - 54,0				
A 48 PS / 3000 min^{-1}								
1500	50,5 - 52,5	1520						
F 62 PS / 2800 min^{-1}								
1400	66,5 - 68,5	1420	800	54,0 - 57,0				
F 58 PS / 2500 min^{-1}								
1250	62,5 - 64,5	1270	800	54,0 - 57,0				
B 56 PS / 2500 min^{-1}								
1250	59,5 - 61,5	1270	800	51,0 - 54,0				
A 51 PS / 2500 min^{-1}								
1250	54,5 - 56,5	1270						
F 55 PS / 2300 min^{-1}								
1150	58,5 - 60,5	1170	800	54,0 - 57,0				
B 53 PS / 2300 min^{-1}								
1150	57,5 - 59,5	1170	800	51,0 - 54,0				
A 48 PS / 2300 min^{-1}								
1150	51,5 - 53,5	1170						
F 49,5 PS / 2000 min^{-1}								
1000	57,5 - 59,5	1010	750	54,0 - 57,0				
B 46,5 PS / 2000 min^{-1}								
1000	53,5 - 55,5	1010	750	51,0 - 54,0				
A 43 PS / 2000 min^{-1}								
1000	48,5 - 50,5	1010						

Test oil ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 43 PS / 1800 min^{-1}								
900	52,5 - 54,5	910	750	52,0 - 55,0				
A 39 PS / 1800 min^{-1}								
900	47,5 - 49,5	910						
B 36 PS / 1500 min^{-1}								
750	49,5 - 51,5	760	650	49,0 - 52,0				
A 33 PS / 1500 min^{-1}								
750	45,5 - 47,5	760						

Test to ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 71 PS / 3000 min^{-1}								
1500	54,5 - 56,5	1520	800	62,0 - 65,0				
A 64 PS / 3000 min^{-1}								
1500	49,5 - 51,5	1520						
F 83 PS / 2800 min^{-1}								
1400	65,5 - 67,5	1420	800	63,0 - 66,0				
F 78 PS / 2500 min^{-1}								
1250	61,5 - 63,5	1270	800	50,0 - 53,0				
B 74,5 PS / 2500 min^{-1}								
1250	58,5 - 60,5	1270	800	50,0 - 53,0				
A 68 PS / 2500 min^{-1}								
1250	53,5 - 55,5	1270						
F 73 PS / 2300 min^{-1}								
1150	60,5 - 62,5	1170	800	52,0 - 55,0				
B 71 PS / 2300 min^{-1}								
1150	58,5 - 60,5	1170	800	50,0 - 53,0				
A 64 PS / 2300 min^{-1}								
1150	51,5 - 53,5	1170						
F 66 PS / 2000 min^{-1}								
1000	57,5 - 59,5	1010	750	52,0 - 55,0				
B 62,5 PS / 2000 min^{-1}								
1000	53,5 - 55,5	1010	750	50,0 - 53,0				
A 57 PS / 2000 min^{-1}								
1000	48,5 - 50,5	1010						

Tractor-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 57 PS / 1800 min^{-1}								
900	51,5 - 53,5	910	750	49,0 - 52,0				
A 52 PS / 1800 min^{-1}								
900	45,5 - 47,5	910						
B 48 PS / 1500 min^{-1}								
750	48,5 - 50,5	760	650	47,0 - 50,0				
A 44 PS / 1500 min^{-1}								
750	45,5 - 47,5	760						

TestoilISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 106 PS / 3000 min^{-1}								
1500	55,5 - 57,5	1520	800	50,0 - 53,0				
A 96 PS / 3000 min^{-1}								
1500	49,5 - 51,5	1520						
F 125 PS / 2800 min^{-1}								
1400	66,5 - 68,5	1420	800	54,0 - 57,0				
F 117 PS / 2500 min^{-1}								
1250	61,5 - 63,5	1270	800	54,0 - 57,0				
B 112 PS / 2500 min^{-1}								
1250	58,5 - 60,5	1270	800	50,0 - 53,0				
A 102 PS / 2500 min^{-1}								
1250	53,5 - 55,5	1270						
F 110 PS / 2300 min^{-1}								
1150	59,5 - 61,5	1170	800	54,0 - 57,0				
B 106 PS / 2300 min^{-1}								
1150	56,5 - 58,5	1170	800	50,0 - 53,0				
A 96 PS / 2300 min^{-1}								
1150	51,5 - 53,5	1170						
F 99 PS / 2000 min^{-1}								
1000	56,5 - 58,5	1010	750	54,0 - 57,0				
B 94 PS / 2000 min^{-1}								
1000	53,5 - 55,5	1010	750	50,0 - 53,0				
A 86 PS / 2000 min^{-1}								
1000	47,5 - 49,5	1010						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 86 PS / 1800 min^{-1}								
900	49,5 - 51,5	910	750	53,0 - 56,0				
A 78 PS / 1800 min^{-1}								
900	46,5 - 48,5	910						
B 72 PS / 1500 min^{-1}								
750	49,5 - 51,5	760	650	47,0 - 50,0				
A 66 PS / 1500 min^{-1}								
750	45,5 - 47,5	760						

Testoil-ISO 4113

Checking values in brackets

• 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 33 PS / 2800 min^{-1}								
1400	51,5 - 53,5	1420	800	46,0 - 49,0				
F 32 PS / 2500 min^{-1}								
1250	52,5 - 54,5	1270	800	46,0 - 49,0				
B 31 PS / 2500 min^{-1}								
1250	49,5 - 51,5	1270	800	44,0 - 47,0				
A 28 PS / 2500 min^{-1}								
1250	49,5 - 51,5	1270						
F 30 PS / 2300 min^{-1}								
1150	48,5 - 50,5	1170	800	46,0 - 49,0				
B 28,5 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170	800	44,0 - 47,0				
A 26 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170						
F 26 PS / 2000 min^{-1}								
1000	43,5 - 45,5	1010	800	46,0 - 49,0				
B 25 PS / 2000 min^{-1}								
1000	41,5 - 43,5	1010	800	44,0 - 47,0				
A 23 PS / 2000 min^{-1}								
1000	41,5 - 43,5	1010						
A 21 PS / 1800 min^{-1}								
900	41,5 - 43,5	910						
A 17 PS / 1500 min^{-1}								
750	39,5 - 41,5	760						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 50 PS / 2800 min^{-1}								
1400	48,5 - 50,5	1420	800	46,0 - 49,0				
F 48,5 PS / 2500 min^{-1}								
1250	50,5 - 52,5	1270	800	46,0 - 49,0				
B 46,5 PS / 2500 min^{-1}								
1250	47,5 - 49,5	1270	800	43,0 - 46,0				
A 42 PS / 2500 min^{-1}								
1250	47,5 - 49,5	1270						
F 46 PS / 2300 min^{-1}								
1150	47,5 - 49,5	1170	800	46,0 - 49,0				
B 44 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170	800	43,0 - 46,0				
A 40 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170						
F 40 PS / 2000 min^{-1}								
1000	44,5 - 46,5	1010	800	46,0 - 49,0				
B 38,5 PS / 2000 min^{-1}								
1000	42,5 - 44,5	1010	800	43,0 - 46,0				
A 35 PS / 2000 min^{-1}								
1000	42,5 - 44,5	1010						
A 31,5 PS / 1800 min^{-1}								
900	40,5 - 42,5	910						
A 26 PS / 1500 min^{-1}								
750	39,5 - 41,5	760						

Test oil ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 68 PS / 2800 min^{-1}								
1400	49,5 - 51,5	1420	800	46,0 - 49,0				
F 66 PS / 2500 min^{-1}								
1250	50,5 - 52,5	1270	800	46,0 - 49,0				
B 63 PS / 2500 min^{-1}								
1250	47,5 - 49,5	1270	800	44,0 - 47,0				
A 57,5 PS / 2500 min^{-1}								
1250	47,5 - 49,5	1270						
F 61 PS / 2300 min^{-1}								
1150	47,5 - 49,5	1170	800	46,0 - 49,0				
B 58,5 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170	800	44,0 - 47,0				
A 53,5 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170						
F 53 PS / 2000 min^{-1}								
1000	43,5 - 45,5	1010	800	46,0 - 49,0				
B 51 PS / 2000 min^{-1}								
1000	41,5 - 43,5	1010	800	44,0 - 47,0				
A 46,5 PS / 2000 min^{-1}								
1000	41,5 - 43,5	1010						
A 42 PS / 1800 min^{-1}								
900	40,5 - 42,5	910						
A 35 PS / 1500 min^{-1}								
750	39,5 - 41,5	760						

Teileliste 1113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 102 PS / 2800 min^{-1}								
1400	49,5 - 51,5	1420	800	46,0 - 49,0				
F 99 PS / 2500 min^{-1}								
1250	50,5 - 52,5	1270	800	46,0 - 49,0				
B 95 PS / 2500 min^{-1}								
1250	47,5 - 49,5	1270	800	44,0 - 47,0				
A 86 PS / 2500 min^{-1}								
1250	47,5 - 49,5	1270						
F 92 PS / 2300 min^{-1}								
1150	47,5 - 49,5	1170	800	46,0 - 49,0				
B 88 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170	800	44,0 - 47,0				
A 80 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170						
F 80 PS / 2000 min^{-1}								
1000	43,5 - 45,5	1010	800	46,0 - 49,0				
B 77 PS / 2000 min^{-1}								
1000	41,5 - 43,5	1010	800	44,0 - 47,0				
A 70 PS / 2000 min^{-1}								
1000	41,5 - 43,5	1010						
A 63 PS / 1800 min^{-1}								
900	40,5 - 42,5	910						
A 52,5 PS / 1500 min^{-1}								
750	39,5 - 41,5	760						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 48 PS / 3000 min^{-1}								
1500	47,0 - 49,0	1520	800	49,5 - 52,5				
A 43,5 PS / 3000 min^{-1}								
1500	44,0 - 46,0	1520						
F 55 PS / 2800 min^{-1}								
1400	53,5 - 55,5	1420	800	52,5 - 55,5				
F 53 PS / 2500 min^{-1}								
1250	55,5 - 57,5	1270	800	52,5 - 55,5				
B 50 PS / 2500 min^{-1}								
1250	52,5 - 54,5	1270	800	49,5 - 52,5				
A 46,5 PS / 2500 min^{-1}								
1250	48,0 - 50,0	1270						
F 50 PS / 2300 min^{-1}								
1150	56,0 - 58,0	1170	800	51,0 - 54,0				
B 48,5 PS / 2300 min^{-1}								
1150	51,5 - 53,5	1170	800	49,5 - 52,5				
A 44 PS / 2300 min^{-1}								
1150	47,0 - 49,0	1170						
F 46 PS / 2000 min^{-1}								
1000	54,0 - 56,0	1010	750	52,5 - 55,5				
B 44 PS / 2000 min^{-1}								
1000	50,5 - 52,5	1010	750	50,0 - 53,0				
A 40 PS / 2000 min^{-1}								
1000	46,0 - 48,0	1010						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 40 PS / 1800 min^{-1}								
900	49,5 - 51,5	910	750	50,0 - 53,0				
A 36,5 PS / 1800 min^{-1}								
900	45,0 - 47,0	910						
B 33,5 PS / 1500 min^{-1}								
750	47,5 - 49,5	760						
A 30,5 PS / 1500 min^{-1}								
750	43,5 - 45,5	760						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 64 PS / 3000 min^{-1}								
1500	47,5 - 49,5	1520	800	49,0 - 52,0				
A 58 PS / 3000 min^{-1}								
1500	44,0 - 46,0	1520						
F 74 PS / 2800 min^{-1}								
1400	53,5 - 55,5	1420	800	52,0 - 55,0				
F 70,5 PS / 2500 min^{-1}								
1250	52,5 - 54,5	1270	800	52,0 - 55,0				
B 67 PS / 2500 min^{-1}								
1250	49,0 - 51,0	1270	800	49,0 - 52,0				
A 61 PS / 2500 min^{-1}								
1250	44,5 - 46,5	1270						
F 67 PS / 2300 min^{-1}								
1150	51,5 - 53,5	1170	800	52,0 - 55,0				
B 64,5 PS / 2300 min^{-1}								
1150	49,0 - 51,0	1170	800	49,0 - 52,0				
A 58,5 PS / 2300 min^{-1}								
1150	44,5 - 46,5	1170						
F 61 PS / 2000 min^{-1}								
1000	50,0 - 52,0	1010	750	49,5 - 52,5				
B 58,5 PS / 2000 min^{-1}								
1000	48,0 - 50,0	1010	750	49,5 - 52,5				
A 53 PS / 2000 min^{-1}								
1000	44,0 - 46,0	1010						

Tesoil ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 53 PS / 1800 min^{-1}								
900	47,0 - 49,0	910	750	49,5 - 52,5				
A 49 PS / 1800 min^{-1}								
900	43,0 - 45,0	910						
B 44,5 PS / 1500 min^{-1}								
750	47,0 - 49,0	760						
A 41 PS / 1500 min^{-1}								
760	43,0 - 45,0	760						

Testoil 830 413

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 96 PS / 3000 min^{-1}								
1500	51,5 - 53,5	1520	800	50,0 - 53,0				
A 87 PS / 3000 min^{-1}								
1500	47,5 - 49,5	1520						
F 112 PS / 2800 min^{-1}								
1400	58,0 - 60,0	1420	800	53,0 - 56,0				
F 106 PS / 2500 min^{-1}								
1250	57,5 - 59,5	1270	800	53,0 - 56,0				
B 101 PS / 2500 min^{-1}								
1250	54,0 - 56,0	1270	800	50,0 - 53,0				
A 92 PS / 2500 min^{-1}								
1250	49,0 - 51,0	1270						
F 101 PS / 2300 min^{-1}								
1150	57,5 - 59,5	1170	800	53,0 - 56,0				
B 97 PS / 2300 min^{-1}								
1150	55,0 - 57,0	1170	800	50,0 - 53,0				
A 88 PS / 2300 min^{-1}								
1150	50,0 - 52,0	1170						
F 92 PS / 2000 min^{-1}								
1000	52,5 - 54,5	1010	750	50,0 - 53,0				
B 88 PS / 2000 min^{-1}								
1000	50,0 - 52,0	1010	750	50,0 - 53,0				
A 80 PS / 2000 min^{-1}								
1000	45,5 - 47,5	1010						

Test oil KHD 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 80 PS / 1800 min^{-1}								
900	50,0 - 52,0	910	750	50,0 - 53,0				
A 73 PS / 1800 min^{-1}								
900	45,5 - 47,5	910						
B 67 PS / 1500 min^{-1}								
750	50,0 - 52,0	760	650	52,0 - 55,0				
A 61 PS / 1500 min^{-1}								
750	45,5 - 47,5	760						

Testoil ESO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 8,7 c 1
2. Edition
En

Testoil-ISO 4113

PE 6 A 90 D 410 RS 2124 X RQ 375/1275 AB 658 DL
Komb.-Nr. 0 400 646 248

superseded 4.81
company Daimler-Benz
engine OM 360
125 kW (170 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,1 - 2,3) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,3-9,4	7,7 - 7,8	0,3(0,45)			
700	10,1+0,1	7,7 - 8,0	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	rev/min 5	Control rod travel mm 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	8,3 4,0	1295-1310 1345-1375	375	7,5	100 375 550 465-505=2 mm	min. 9,0 7,4 - 7,6 max. 1,0	1250 1075 895 700	9,3-9,4 9,4-9,7 9,8-10,0 10,1-10,2

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation 1295 - 1310 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/100 strokes 7
1250	77,0 - 78,0 (75,0 - 80,0)	650	700	77,0 -78 ,0 (75,0 - 80,0)	100	115,0-125,0 (112,0-128,0)

Checking values in brackets

7.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

40

WPP 001/4 MB 5,7 q

4. Edition

En

PES 6 A 90 D 410 RS 2293 EP/RSV 350-1400 A0 B1080DL(1)
RS2293 350-1425 A2 B1028DL(2)
RS2293 350-1400 A0 B 745L (3)
RS2293Z 350-1400 A0 B 745L (4)

C

supersedes 12.83
company: Daimler-Benz
engine: OM352 (A)
92kW (125PS - 1-2)
115kW (156PS - 3)
123kW (168PS - 4)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,5 - 5,0	0,3(0,45)			
	6	1,8 - 2,6				
	12	7,3 - 8,2				
200	9	2,0 - 2,8				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

..1080DL (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.67	1400	16,0	without auxiliary spring			ca.20	350	9,2	1380	0
	1450	11,4					100	19 - 21		
	1500	5,5					350	8,9-9,5	600	0,2-0,3
	1470	8,0-10,4	with auxiliary spring				500	3,6-6,2		
(5)	1520	3,8-6,8					700	0 - 1		
	1640	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	mm kW 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
(1) 1400	63,0 - 64,0 (61,0 - 66,0)	1450-1460*	600	51,0 - 53,0 (49,0 - 55,0)	100	14,7-15,3		
					1520	-1540 = 4,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.85

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EAA

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.60	1425 1500 1560	16,0 11,5 6,5	without auxiliary spring			ca.20	350	7,5	1400	0
							200	19 - 21		
							350	7,2-7,8	800	0
	1500	10,0-12,2					600	1,0-4,5		
(5)	1600	3,8-6,0	with auxiliary spring				780	0 - 1	450	0,4-0,6
	1760	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to rev/min						Control rod travel mm
rev/min	cm^3/1000 strokes		rev/min	cm^3/1000 strokes	rev/min	mm RW	rev/min	
1	2	3	4	5	6	7	8	9
(2) 1400	60,0 - 61,0 (58,0 - 63,0)	1450-1460*	500 (6a)	46,0 - 48,0 (44,0 - 50,0)	100	14,7-15,3		

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

745L (3)

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.63	1400 1500 1580	16,0 9,8 3,8	without auxiliary spring			ca.29	350	7,9		
							200	19 - 21		
							350	7,6-8,2		
ca.61	1400	ca. 11,9					500	3,1-5,5		
(5)	1525	ca. 4,6	with auxiliary spring				700	0 - 1		
	1650	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						Control rod travel mm
rev/min	cm^3/1000 strokes		rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
(3) 1380	74,5 - 75,5 (72,5 - 77,5)	1420-1430*			100	78,0-88,0 (75,0-91,0)	350	7,9

Checking values in brackets

* 1 mm less control rod travel than col 2

The numbers denote the sequence of the tests

B. Governor Settings

① Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4)	(5)	(6)	④ Lower rated speed: Control-lever deflection in degrees (7)	rev/min (8)	Control rod travel mm (9)	③ Torque control: rev/min (10)	Control rod travel mm (11)
loose	800	0,3-1,0	-	-	-	ca. 33	350	7,4	-	-
	x =						100	min.19,0		
							350	7,8-8,0		
ca. 66	10,9	1420-1430					570-630	=2,0		
②a	4,0	1530-1560								
	1700	0,3-1,7								

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	⑥ Rotational-speed limitat. Note: changed to ... rev/min (3)	③a Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery Idle ⑤: rev/min (6)	cm³/1000 strokes (7)	④a Idle stop: rev/min (8)	Control rod travel mm (9)
1380	75,5-76,5 (73,5-78,5)	1420-1430*	-	-	100	78,0-88,0 (75,0-91,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

① Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4)	(5)	(6)	④ Lower rated speed: Control-lever deflection in degrees (7)	rev/min (8)	Control rod travel mm (9)	③ Torque control: rev/min (10)	Control rod travel mm (11)
②a										

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	⑥ Rotational-speed limitat. Note: changed to ... rev/min (3)	③a Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery Idle ⑤: rev/min (6)	cm³/1000 strokes (7)	④a Idle stop: rev/min (8)	Control rod travel mm (9)

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 q 4
3. Edition
En

PES6A 90 D 410 RS 2293 RSV 350-1300 AOB 1101 DL
AOC 1101 L
Komb.-Nr. 0 400 876 256

superseded 10.82
company Daimler-Benz
engine OM 352 A
110 kW (150 PS)

Testöl-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,1-2,3) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	10,6+0,1	7,0 - 7,1	0,3(0,45)			
350	6,9-7,1	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 3,0	-	-	-	ca.18	350	6,5	1300	10,6+0,1
							100		800	10,9+0,2
ca.55 (5)	9,6	1340-1350					350	6,9-7,1	500	11,3+0,1
	4,0	1375-1405					465-525=2,0mm			
	1500	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1300	70,0 - 71,0 (68,0 - 73,0)	1340-1350*	500	62,0 - 64,0 (60,0 - 66,0)	100	80,0-90,0 (77,0-93,0) - 14,6 - 15,0 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

8.85

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E14

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 5,7 q 8
3. Edition
En

PES 6 A 90 D 410 RS 2293
Komb.-Nr. 0 400 876 316

RSV 350-1200 A0B 1101-1 L
A0C 1101-1 L

superseded 12.83
company Daimler-Benz
engine OM 352
70 kW (95 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1200	8,4-8,5	4,5-4,6	0,3(0,45)			
350	7,1-7,3	0,8-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,7	-	-	-	-	350	7,2	1200	8,4-8,5
	x = 4,0								600	9,6-9,7
							350	7,1-7,3	850	9,3-9,5
ca.64	7,4	1220-1230					455-515	= 2,0	1000	8,7-9,0
(2a)	4,0	1290-1320								
	1400	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1200	45,0-46,0 (43,0-48,0)	1220-1230*	600	43,0-45,0 (40,5-47,5)	100	78,0-88,0 (75,0-91,0) = 14,9 - 15,3 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.85

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E15

E45

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 z
2. Edition

En

PES 6 A 90 D 410 RS 2293 RSV 750-1500 A 2 B 2156 L
A 2 C 2156 L
Komb.-Nr. 0 400 876 306

supersedes 10.82
company: Daimler-Benz
engine: OM 352
45 kW (61 PS)

Testoil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1450	6,8-6,9	3,5 - 3,6	0,3 (0,45)			
750	4,9-5,1	0,7 - 1,3	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca.40	750	5,0	-	-
	x =						750	4,9-5,1		
ca.6							770-830	=2,0		
(5)	5,8	1495-1500								
	4,0	1512-1533								
	1575	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1450	34,5-35,5 (32,5-37,5	1495-1500*	-	-	100	78,0-88,0 (75,0-91,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.85

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E16

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 5,7 q 11

2. Edition

En

PES 6 A 90 D 410 RS 2293 RSV 350-1100 A0C 2002-1 L

Komb.-Nr. 0 400 876 329

supersedes 1.85
company Daimler-Benz
engine OM 352
70 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1090	9,1-9,2	4,8-4,9	0,3 (0,45)			
350	7,2-7,4	0,8-1,4	0,25 (0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 35	350	7,3	1090	9,1-9,2
	x =								800	10,1-10,2
							100	min. 19,5	975	9,6-9,8
ca. 56 (2a)	8,1	1130-1140					350	7,2-7,4		
	4,0	1190-1220					470-530	= 2,0		
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1090	48,0-49,0 (46,0-51,0)	1130-1140*	800	53,0-55,0 (50,5-57,5)	100	78,0-88,0 (75,0-91,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

8.85

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E17

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 5,7 q 7
3. Edition
En

PES 6 A 90 D 410 RS 2293 Z RSV 350-1300 A 0 B 1101 DL
1101-2L
Komb.-Nr. 0 400 876 257 A 0 C 1101-2L

supersede 2.85
company Daimler-Benz
engine OM 352
70 kW (95 PS)
Unimog

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	8,2-8,3	4,5 - 4,6	0,3(0,45)			
350	6,6-6,8	0,8 - 1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-		350	6,7	1300	8,2-8,3
	x = 4,75								500	9,6-9,7
							100	min.19,0	900	8,9-9,1
ca.63	7,2	1340-1350					350	6,6-6,8	1075	8,3-8,6
(2a)	4,0	1395-1425					450-510	= 2,0		
	1500	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1300	44,5-45,5 (42,5-47,5)	1340-1350*	500	39,0-42,0 (36,5-44,5)	100	78,0-88,0 (75,0-91,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

8.85

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E18

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 5,5c
4. Edition

En

PES 6 A 90 D 410 RS 2633 RQV 300-1500 AB 1152 L

Komb.-Nr. 0 400 846 482

supersedes 8.82
company: FIAT
engine: 8060.04.661
81 kW (110 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	9,0-9,1	4,9-5,1	0,3 (0,45)			
300	8,2-8,4	1,1-1,7	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1525	15,2-17,8	-	-	-	ca.17	100	min.9,0	250	,1-1,3
							300	8,2-8,4	570	,5-4,8
							900	max.1,0	1080	5,0-6,2
									1500	8,3
ca.59	8,0	1540-1550								
	4,0	1635-1665				330-430 (3a)				
	1800	0 - 1,0								

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (c) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5): rev/min 8	Control rod travel mm 9
1500	48,5-49,5 (46,5-51,5)	1540-1550	900	42,0-45,0 (40,0-47,0)	100	68,0-78,0 (65,0-81,0) = 13,4-13,6 mm RW	1500	9,0+0,1
			500	36,0-38,0 (33,5-40,5)			500	9,6+0,1
							860	9,4+0,2
							1090	9,0+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.85

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 5,5 d
4. Edition
En

PES 6 A 90 D 410 RS 2633 RQV 300-1500 AB 1165 L
Komb.-Nr. 0 400 846 494

supersedes 5.84
company: Fiat
engine: 8060.04.662
80.8 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2 - 2,3 (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	9,1-9,2	5,3 - 5,4	0,3(0,45)			
300	7,9-8,1	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1530	15,2-17,8	-	-	-	ca. 17	100 300	min. 9,2 7,9-8,1	250 670 1080 1500	1,1-1,3 4,5-4,8 6,0-6,2 8,4
ca. 59	8,1 4,0 1800	1540-1550 1645-1675 0 - 1,0				315-415 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed: rev/min (4a) 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1500	52,5-53,5 (50,5-55,5)	1540-1550*	500	38,5-40,5 (36,0-43,0)	100	68,0-78,0 (65,0-81,0) = 13,2-13,6 mm RW	1500 500 930 1130	9,1+0,1 9,6+0,1 9,3+0,2 9,1+0,3
			930	48,5-50,5 (46,0-53,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.85

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E20

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 KHD 3,0 a 1

2. Edition

En

PES 3 A 90 D 410/3 RS 2640 RSV 325-1150 AOC 2157-1 L

Komb.-Nr. 0 400 863 006

supersedes 4.85
company KHD
engine F 3 L 913
37 kW /2300 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1140	9,6-9,7	6,6-6,7	0,3(0,45)			
350	7,6-7,8	1,0-1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 23	350	7,2	1140	9,6-9,7
	x =	4,25							500	9,9-10,0
							350	7,6-7,8	800	9,9-10,0
ca. 63 (2a)	8,6	1175-1185					500-560	= 2,0	1040	9,7-9,9
	4,0	1230-1260								
	1430	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
1140	65,5-66,5 (63,5-68,5)	1175-1185*	500	50,5-52,5 (48,0-55,0)	100	11,0-11,4 mm RW	-	-
			800	58,5-60,5 (56,0-63,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

7.85

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E21

E2A

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 VAL 4,4 a

4. Edition

En

PES 4 A 95 D 320 RS 2654 RSV 325-1050 A 2 B 2178 R

supersedes 5.84

company Valmet

engine 411 DS 8

Komb.-Nr. 0 400 874 236

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Tastoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	9,4-9,5	7,7-7,9	0,35(0,6)			
325	4,9-5,1	1,2-1,5	0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.25	325	4,5	1050	9,4-9,5
	x= 5,0						100	min.19,5	500	10,4-10,5
							325	4,9-5,1	840	9,9-10,1
ca.47	8,4	1090-1100					405-465=2,0			
(2a)	4,0	1140-1170								
	1305	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
1050	77,0-79,0 (75,0-81,0)	1090-1100*	500	76,0-79,0 (73,5-81,5)	100	185,0-195,0 (182,0-198,0) =19,5-21,0 mm RW	325	5,0
			750	82,5-84,5 (80,0-87,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

7.85

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E22

E22

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 VAL 3,3 a

5. Edition

PES 3 A 95 D 320 RS 2655 RSV 325-1150 A 2 B 2178-1 R En

supersedes 5.84

company Valmet

engine 311 DS 6

Komb.-Nr. 0 400 873 032

1-2-3 je 120° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,4-9,5	7,8-8,0	0,35(0,6)			
325	4,9-5,1	1,0-1,5	0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.24	325	4,5	1150	9,4-9,5
	x= 5,0						100	min.19,5	500	11,1-11,2
							325	4,9-5,1	915	10,2-10,4
ca.50	8,4	1090-1200					405-465=2,0			
(2a)	4,0	1240-1270								
	1405	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1150	78,0-80,0 (76,0-82,0)	1190-1200*	500	86,0-88,0 (83,5-90,5)	100	185,0-195,0 =19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.85

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E23

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MWM 4,1 b
3. Edition

En

PES 4 A 90 D 320/3 RS 2659 RSV 325-1500 A2B 505-2 R
Komb.-Nr. 0 400 864 057 A2C 505-2 R

supersedes 5.84
company MWM
engine D 266 B-4

Test oil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,95-3,05 (2,90-3,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1500	10,5+0,1	9,0-9,1	0,3 (0,45)			
325	6,4-6,6	1,1-1,7	0,2 (0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.27	325	6,0	-	-
	x = 5,5						100	min.19,5		
ca.66 (2a)	9,5	1540-1550					325	6,4-6,6		
	4,0	1590-1620					460-520	= 2,0		
	1780	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1500	89,5-90,5 (87,5-92,5)	1540-1550*	-	-	100	131,0-141,0 - (128,0-144,0) = 19,5-21,0 mm RW		-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.85

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E24

E24

Testoil-ISO 4113

PES 4 M 55 C 320 RS 152-1
RSF 375/2300 M 55

Komb.-Nr. 0 400 074 965/Sales model 0 400 074 964
1- 3- 4 - 2
0-90-180-270

supersedes 6.84
company Daimler-Benz
engine OM 601
53 kW
Europa

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC)

Control rod travel RW 20,0-22,0 mm

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	11,1+0,1	3,1-3,2	0,25 (0,3)			
375	5,4-5,6	0,5-0,6	0,10(0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in ☐.

Checking values in brackets

B. Governor Settings

Lower rated speed				Upper rated speed				Variations in control rod travel		
Degree of deflection of control lever 1		Control rod travel mm 2	Rotational speed rev/min 3	Degree of deflection of control lever 4		Control rod travel mm 5	Rotational speed rev/min 6	7	Rotational speed rev/min 8	Control rod travel mm 9
13-17	①	min.11,5	250	50	⑦	10,3-10,5	2200	⑫	100	min.20,1
	②	5,4-5,6	375		⑧	7,8-8,2	2500	⑬	1800	10,8-11,0
	③	4,4-4,6	400**		⑨	-		⑭	1000	11,1-11,2
	④	-			⑩					
	⑤	1,5	630-730		⑪			⑥	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑲ Test oil temp 40°C (104°F)		Full-load speed regulation ⑧a	Variations in fuel delivery ⑰ ⑱		Starting fuel delivery Idle		
							Difference
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	cm³/1000 strokes 8
2200	33,0-35,0 (32,0-36,0)	2500 * 7,8-8,2 mm RW	1800	34,0-35,5 (33,0-36,5)	100	min. 55	6,0 ⑫a
					375	5,0-6,0 (4,5-9,0)	1,0 (1,5) ⑮
			1000	31,0-32,0 (30,0-33,0)	2500	22,0-26,0 (21,0-27,0	2,5 See (3,0) Point ⑯ 8 a

Checking values in brackets

* ca. 2,4

less control rod travel than in Column 2

4.85

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FA

Important:

Test specifications apply to control rod stop screw with collar 6.3 mm dia. and thread M 10 x 1.

For pump versions with control rod stop screw with collar 5.3 mm dia. and thread M 8 x 1, all specified control rod travel values must be increased by 0.5 mm.

1. ** Checking the idle speed auxiliary spring setting at n = 400 rpm, control rod travel (4.3-4.7 mm)

2. Setting the idle control lever position:

   At 1000 rpm, control rod travel 0.9 - 1.0 mm.

3. Checking the idle speed auxiliary spring shut-off

   Control lever position 50°, after change-over point (from starting curve) until 1000 rpm, max. permissible control rod travel 0.2 mm. Control lever position 48.5°; after change-over point (from starting curve) control rod travel must be greater than 0.2 mm.

4. Checking the pneumatic shut-off box

   Control lever on idle stop.
   At n = 375 rpm and pu = 450 mbar (vacuum) (338 mm Hg), the control rod must travel rapidly to control rod position = 0 mm.

5. Overflow valve 1 469 990 351,

6. Port closing difference between largest/smallest value max. 1° camshaft angle.

7. Setting the idle speed control rod travel on the pneumatic idle boost box

   When doing this, release the lock nut.

8. Checking the pneumatic idle boost:

   With 0.4 bar vacuum, n = 425 rpm, control rod travel = (7.0 - 8,6 mm) Delivery = (11.0 - 19.0 cm^3/1000 strokes).

9. Leak test (vacuum test) of pneumatic idle boost box

   Apply 0.8 bar vacuum to the pneumatic idle boost box via a three-way valve and a pressure gauge. Using the three-way valve, disconnect the vacuum supply from the pneumatic idle boost box and pressure gauge. Permissible pressure drop 30 mbar in 15 sec.

10. Start-of-delivery sensor setting

    Start-of-delivery sensor setting and locking according to average port closing value for all cylinders 19.5 ± 0.2 (0.3)° camshaft angle after cylinder 1.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 NB 11,8 a 1
4. Edition
En

Testoil-ISO 4113

PE 6 P 100 A 720 RS 15 RQ 250/1100 PA 111 DR
Komb.-Nr. 0 401 846 194

supersedes 5.84
company Daimler-Benz
engine OM 355
154 kW (210 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1090	12,0+0,1	10,0 - 10;2	0,3 (0,6)			
250	7,9-8,1	1,7 - 2,3	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	rev/min 5	Control rod travel mm 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,5-16,5	600	16,0	11,0	1135-1150	250	6,0	100	mind. 7,0	1090	12,0-12,1
				4,0	1210-1240			250	5,9- 6,1	700	12,3-12,4
				1300	0 - 1,0			385-425	= 2,0	450	12,6-12,7

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation at 1135 - 1150 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/100 strokes 7
1090	100,0 - 102,0 (98,0 - 104,0)		700	96,0 - 99,0 (94,0 - 101,0)	100	150,0-170,0 (146,0-174,0)
			450	90,0 - 94,0 (88,0 - 96,0)		

Checking values in brackets

05,85

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F3

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MB 11,8 n
2. Edition
En

PE 6 P 110 A 720 RS 371 RQV 300-1050 PA 747
Komb.-Nr. 9 400 087 319

supersedes 6.85
company: Daimler-Benz
engine: OM 355 A
210 kW

Tesi-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,5+0,1	16,1-16,3	0,4 (0,75)			
300	5,9-6,1	1,6-2,1	0,35(0,45)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max	1100	15,2-17,8	-	-	-	ca.14	100	min. 8,6	260	1,0-1,4
ca. 68	10,5	1090-110					300	5,9-6,1	450	2,5-2,8
	4,0	1160-1190					530-590	= 2,0	800	5,4-5,7
	1300	0 - 1,0				380-440 (3a)			1070	8,6

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1050	161,0-163,0 (159,0-165,0)	1090-1100*	500	152,0-156,0 (149,0-159,0)	100	144,0-160,0 = 12,7-13,1 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.85

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F4

Test Specifications Fuel Injection Pumps and Governors

PE 6 P 120 A 320 RS 7102 RQ 200/1000 PA 745
Komb.-Nr. 0 402 646 822

supersedes 4.85
company Scania
engine DS9 03

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 5,0-5,1 (4,95-5,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,0+0,1	16,3 - 16,5	0,6(0,9)			3,3 ± 0,1
225	4,8-5,0	1,5 - 1,9	0,3(0,6)			(3,0 - 3,5) **

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	rev/min 5	Control rod travel mm 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
800	15,2-17,8	800	16,5	11,0	1045-1060	225	4,9	100	min. 6,3	-	-
VH =	max. 46°			4,0	1185-1215			225	4,8-5,0		
				1300	0-1,0			305-	345=2,0		

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation At 1045-1060 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/100 strokes 7
LDA 700	0,9 bar 163,0 - 165,0 (160,0 - 168,0)	-	LDA 1000	0,9 bar 162,0 - 170,0 (160,0 - 172,0)	100	240,0 - 290,0 = 20,0 - 21,0 mm RW
			LDA 500	0 bar 141,0 - 145,0 (139,0 - 147,0)		

Checking values in brackets

10 .85

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F5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P.. RS 7102	0,90		12,0 - 12,1
+ RQ.. PA 745		0	11,3 - 11,4
		0,42	11,7 - 11,8
		0,38	11,5 - 11,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-J-400/116
- For sealing, see VDT-J-400/117
- Test specifications approved by Scania on 4.10.1984
- Start of fuel delivery-engine: 15° v. OT
- Firing sequence, engine : 1-5-3-6-2-4

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 2,9 - 3,1 mm.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 M3 5,7 e 1
6. Edition
En

PES 6 A 80 D 410 RS 2085 Y RQV 300-1475 AB 533 DL

Komb.-Nr. 0 400 846 185

supersedes 10.84
company: Daimler-Benz
engine: OM 352

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1450	8,2-8,3	4,6 - 4,7	0,2(0,35)			
300	6,9-7,1	1,3 - 1,6	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1420	15,2-17,8	-	-	-	ca. 14	100 300	min. 8,2 6,9-7,1	250 660 1060 1475	0,8-1,1 3,4-3,8 5,3-5,5 8,3
ca. 60	7,2 4,0 1700	1505-1515 1560-1590 0 - 1,0				330-450 ③a				

Torque control travel a = 1,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
1450	46,0-47,0 (44,5-48,5)	1505-1515*	800	45,5-47,5 (44,0-49,0)	100	71,5-81,5 (68,5-84,5) = 12,9-13,3 mm RW	1450 500 800 1200	8,2-8,3 9,2-9,3 8,9-9,1 8,2-8,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.85

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 m
8. Edition
En

Testoil-ISO 4113

PES 6 A 80 C 410 RS2085X EP/RSV 350-1300 A2B1005D (1) ..2C.. supersedes 12.84
..D.. RS2085X EP/RSV 350-1425 A2B1001D (2) company
RS2085X EP/RSV 350-1425 A2B1007D (3) engine 12.84 Daimler-Benz OM 352 - Unimog
RS2085T EP/RSV 350-1300 A2B1005D (4) (1+4) 84 PS (2) 90 PS (3) 100 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,8 - 4,3	0,3			
	6	1,2 - 2,0				
	15	9,8 - 11,0				
200	9	1,8 - 2,6				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

A2 C
350-1300 A2 B1005 D (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	loose	350	6,9	1300	8,0+0,1
	x	= 4,25					100	min.17,5	500	9,4+0,1
							350	6,8-7,0	700	9,2+0,2
ca.48 (5)	7,0	1340-1350					620-680=2,0		950	8,3+0,3
	4,0	1400-1430								
	1575	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
(1) 1300	40,0 - 41,0 (38,5-42,5)	1340-1350 *	500	39,5 - 41,5 (37,5-43,5)	100	78,0 - 88,0 (75,0-91,0) = 14,5 - 14,9 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.85

F8

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F8

B. Governor Settings

350-1425 A2 B1001D (2)

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.60	1425	16,0	without auxiliary spring			ca.22	350	7,5	1400	0
	1500	11,5					200	19 - 21		
	1560	6,8					350	7,2-7,8	900	0 -0,2
	1530	7,5-10,5	with auxiliary spring				500	5,1-6,6	400	1,3-1,5
(5)	1600	4,0-6,0					700	0,1-4,0		
	1820	0,3-1,0					940	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
(2) 1400	41,5 - 42,5 (40,0-44,0)	1455-1465	1000	37,5 - 39,5 (36,0-41,0)	-	-	-	-
			800	39,0-41,0 (37,5-42,5)				
			(6a) 500	40,5-42,5 (39,0-44,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

350-1425 A2 B1007D (3)

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.60	1425	16,0	without auxiliary spring			ca.22	350	7,2	1400	0
	1500	11,4					200	19 - 21		
	1560	6,6					350	6,9-7,5	950	0
	1520	8,0-10,9	with auxiliary spring				600	2,3-4,6	450	0,9-1,1
(5)	1650	2,1-4,4					850	0 -1,5		
	1800	0,3-1,5								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
(3) 1400	45,5 - 46,5 (44,0-48,0)	1420-1430	1000	41,5 - 43,5 (40,0-45,0)	-	-	-	-
			800	43,0-45,0 (41,5-46,5)				
			500	40,5-42,5 (39,0-44,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

The numbers denote the sequence of the tests

B. Governor Settings

.. A 2 B 1005 D (4)

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	 5	 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
ca. 51	1300 1360 1400	16,0 10,8 6,7	without auxiliary spring			ca. 19	350 200 350 600 780	8,0 19-21 7,7-8,2 2,2-4,3 0-1,0	1280 800	0 0,8-1,0
ca. 49 (2a)	1300 1400 1520	ca. 8,2 ca. 3,7 0,3-1,0	with auxiliary spring							

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
1290 (4)	40,0-41,0 (38,5-40,5)	1330-1340*	800 500	36,5-39,5 (35,0-41,0) 36,5-39,0 (35,0-40,5)	100	72,5-82,5	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	 5	 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
(2a)										

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 3,8 i
4. Edition

En

PES 4 A 80 D 410 RS 2094 EP/RSV 350-1400 A5 B 740 (1)
350-1300 A1 B 752 D (2)
350- 900 A0 B 764 (3)

supersedes 11.75
company Daimler-Benz
engine OM 314
(80 PS-1)
(68 PS-2)
(53 PS-3)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 01 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,6-6,0				
200	6	1,3-2,2				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

350-1400 A5 B740 (1)

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.55	1400 1450 1480	16,0 9,4 3,4	without auxiliary spring	ca.16	350	4,5	-	-
					200	19-21		
					350	4,2-4,8		
ca.53	1380 1460 1570	ca.8,3 ca.3,0 0,3 - 1,0	with auxiliary spring		450 600	2,3-3,3 0 - 1		
(2a)								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5) (4a) Idle stop: rev/min 8	Control rod travel mm 9
1380	56,5-58,5	1415-1425*	1450	1470: 3,0 mm RW	100	ca.8		
	(increase by ± 0,5 cm³!)							

Checking values in brackets

* 1 mm less control rod travel than col 2

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B. Governor Settings

350-1300 A 1 B 752 D (2)

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 73	1220	16,0	without auxiliary spring			ca. 28	350	5,3	1280	0
	1280	10,2					200	19 -21		
	1325	6,6					350	5,0-5,6		
	1320	ca. 7,6	with auxiliary spring				450	2,5-3,7	500	0,6-0,8
(5)	1370	ca. 3,0					600	0 - 1		
	1450	0,3 - 1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to						Control rod travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
1280	48,5 - 50,5	1320-1330 *	1000	47,5 - 50,5	100	ca. 8		
			700	46,5 - 49,5				
			(6a)					

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

350-900 A 0 B 764 (3)

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 33	750	16,0	without auxiliary spring			ca. 18	350	5,3	-	-
	820	10,3					220	19 -21		
	870	5,1					350	5,0-5,6		
ca. 30	730	ca. 8,2	with auxiliary spring				370	2,5-4,0		
(5)	780	ca. 2,8					420	0 - 1		
	820	0,3 - 1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to						Control rod travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
880	47,5-49,5	895-905 * (VH ca. 34)	-	-	100	72,5 - 82,5	-	-
			930 -	945 : 2,8 mm				

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 8,7 g
En 4. Edition

Testoil-ISO 4113

PE 6 A 90 D 410 RS 2124 EP/RSV 300-1050 A1B565D (1)
425-1165 A7B592D (2)
..350-1100 A1B 672 D (6) 425-1165 A1B630D (3)
..A1C665 L (7) 575-1150 A1B665 (4)
.. 700-1250 A1B665 (7) 300- 750 A4B666 (5)

supersedes 9.76
company Daimler-Benz
engine OM 360

(1 - 140 PS) (6 - 172 PS)
(2 - 135 PS) (7 - 175 PS)
(3 - 140 PS)
(4 - 170 PS)
(5 - 112 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	6,4 - 6,9	0,4			
	6	2,9 - 3,8				
	15	13,8 - 15,3				
200	6	0,2 - 1,0				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

300-1050 A1B565D (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 52	1050	16,0				ca. 20	300	6,0	1030	0
	1080	12,0	without auxiliary spring				200	19 - 21		
	1120	5,6					300	5,7-6,3	700	0,1-0,3
(5)	1100	7,2-10,2					400	2,6-4,3		
	1150	2,4-4,6	with auxiliary spring				550	0 - 1	400	0,4-0,6
	1250	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7 mm RW	(5a) Idle stop: rev/min 8	Control rod travel mm 9
(1) 1030	69,5-71,5	1065-1075 *	700	69,5 - 72,5	100	ca. 12	300	6,0

Checking values in brackets

* 1 mm less control rod travel than col 2

7.85

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EA3

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 67	1175	12,0	without auxiliary spring			ca. 25	425	5,6	1150	0
	1185	7,0					200	19 - 21		
	1200	2,2					425	5,3-5,9	900	0,3-0,5
ca. 66	1175	ca. 8,5	with auxiliary spring				560	0 - 1		
(5)	1210	ca. 3,5							500	0,7-0,9
	1260	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to						Control rod travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes mm RW	rev/min	mm
1	2	3	4	5	6	7	8	9
(2) 1145	62,5 - 64,5	1180-1190*	800	60,0 - 63,0	100	ca. 12	425	5,6
			500	58,0 - 61,0				
			(6a)					

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

425-1165 A1B630D (3)

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 58	1165	16,0	without auxiliary spring			ca.25	425	6,0	1145	0
	1200	10,9					200	19 - 21		
	1230	5,0					425	5,7-6,3	900	0,3-0,5
ca. 56	1165	ca. 8,5	with auxiliary spring				500	1,4-3,6		
(5)	1210	ca. 3,5					580	0 -1,5	500	0,9-1,1
	1260	0,3-1,5								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to						Control rod travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes mm RW	rev/min	mm
1	2	3	4	5	6	7	8	9
(3) 1145	67,0 - 69,0	1180-1190*	800	64,0 - 67,0	100	ca. 12	425	6,0
			500	61,5 - 64,5				
			1200-	1215=3,5mmRW				

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

575-1150 A1B665 (4)

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 55	1150 1180 1210	16,0 11,0 4,5	without auxiliary spring			ca. 28	575	4,5		
							200	19 - 21		
ca. 54	1160 1190 1250	ca. 10 ca. 3,5 0,3-1,0	with auxiliary spring				575 610 680	4,2-4,8 1,8-3,1 0 - 1		
(5)										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes mm RW	rev/min	
1	2	3	4	5	6	7	8	9
(4) 1130	79,0 - 81,0	1165-1175*	-	-	100	ca. 12	575	4,5
			(6a) 1185-1195=3,5mmRW					

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

300-750 A4B666 (5)

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 41	750 780 810	16,0 10,4 3,4	without auxiliary spring			ca. 19	300	7,5		
							200	19 - 21		
ca. 40	760 785 850	ca. 10 ca. 4,0 0,3-1,0	with auxiliary spring				300 400 480	7,2-7,8 1,0-2,7 0 - 1		
(5)										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes mm RW	rev/min	
1	2	3	4	5	6	7	8	9
(5) 730	79,5 - 81,5	755-765	-	-	100	ca. 12	300	7,5

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 63	1100 1160 1200	16,0 10,9 6,3	without auxiliary spring			ca. 28	350	6,0	1080	
							200 350 450 620	19 - 21 5,7-6,3 3,0-4,3 0 - 1	450	0,5-0,7
ca. 60 (5)	1100 1185 1260	ca. 9,8 ca. 3,5 0,3-1,0	with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to						Control rod travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes mm RW	rev/min	mm
1	2	3	4	5	6	7	8	9
(6) 1080	78,0 - 80,0	1125-1135 *	800 500	80,5 - 83,5 75,0 - 78,0	100	ca 12	350	6,0
			(6a) 1175-	1195 3,5 mm RW				

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

A1C665 L
700-1250 A1B665 (7)

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 60	1250 1280 1310	16,0 11,0 5,0	without auxiliary spring			ca. 33	700	4,5		
							200 700 740 780	19 - 21 4,2-4,8 1,0-2,5 0 - 1		
ca. 59 (5)	1260 1290 1340	ca. 9,4 ca. 3,5 0,3-1,0	with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to						Control rod travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
(7) 1230	83,5 - 85,5 (81,5-86,5)	1265-1275 *	-	-	100	ca. 12 mm RW	700	4,5
			1290-	1300=3,5mmRW				

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps and Governors

(1A) WPP 001/4 MB 8,7i

6. Edition

En

Testoil-ISO 4113

PE 6 A 90 D 410 RS 2124 RSV 700-1150 A 1 B 665 L
A 1 C 665 L

Komb.-Nr. 0 400 676 117

supersedes 11. 84
company Daimler- Benz
engine OM 360
125 kW (170 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30) 2,15-2,25 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,6-10,7	8,8 - 8,9	0,3(0,45)			
700	5,6-5,8	1,8 - 2,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	900	0,3-1,0	-	-	-	ca.31	700	5,2	-	-
ca.53 (2a)	9,6 4,0 1250	1160-1165 1184-1201 0,3-1,7					700 690-750	5,1-5,3 = 2,0 **		

The numbers denote the sequence of the tests

** Set idle-speed auxiliary spring at 2,0 mm control-rod travel.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery (5)		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	87,5 - 88,5 (85,5 - 90,5)	1160-1165*	-	-	100	15,0-125,0 (12,0-128,0) = 14,6 - 15,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.85

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MWM 6,2 c
5. Edition

Testoil-ISO 4113

PES 6 A 90 D 320/3 RS2393 | EP/RSV 300-1000 A7 B529DR
RS2464 | 325-1500 A2 B529 DR

En
d
C

supersedes 10.84
company MWM
engine TD 226-6

As from FD 823 the idle auxiliary-spring has been changed from 1 424 641 000 to ... 001. New values enclosed.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,1 - 5,5	0,4			
	6	1,6 - 2,6				
200	9	1,9 - 2,9				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

RSV 300-1000

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.68	1000	16,0	without auxiliary spring			ca.28	300	5,5	-	-
	1050	8,5					100	19 - 21		
	1100	2,4					300	5,7-6,3		
(5) ca.67	1030	8,0-9,0	with auxiliary spring				450	0 - 1		
	1070	2,0-4,0								
	1120	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
See page 3 - 4!								

Checking values in brackets

* 1 mm less control rod travel than col 2

4.85

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The numbers denote the sequence of the tests

B. Governor Settings

RSV 325-1500..

(1) Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	(4) Control-lever deflection in degrees (7)	Lower rated speed rev/min (8)	Lower rated speed: Control rod travel mm (9)	(3) Torque control rev/min (10)	(3) Torque control: Control rod travel mm (11)
loose	800	0,3-0,7	- - -	ca. 20	325	7,0	-	-
	x = 3,5				325 450-510	7,4-7,6 = 2,0		
ca. 58 (2a)	8,0 4,0 1700	1520-1530 1560-1590 0,3-1,4						

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	(6) Rotational-speed limitat. Note: changed to ...) rev/min (3)	(3a) Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery (5) Idle: rev/min (6)	cm³/1000 strokes (7)	(4a) Idle stop: rev/min (8)	Control rod travel mm (9)
See page 3 - 4!		1520-1530*						

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	(4) Control-lever deflection in degrees (7)	Lower rated speed rev/min (8)	Lower rated speed: Control rod travel mm (9)	(3) Torque control rev/min (10)	(3) Torque control: Control rod travel mm (11)
(2a)								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	(6) Rotational-speed limitat. Note: changed to ...) rev/min (3)	(3a) Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery (5) Idle: rev/min (6)	cm³/1000 strokes (7)	(4a) Idle stop: rev/min (8)	Control rod travel mm (9)

Checking values in brackets

* 1 mm less control rod travel than col. 2

C: Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation		Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min		rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3		4	5	6	7	8	
F 150 PS / 2500		min^{-1}							
1250	87,0 - 89,0	1270		800	84,0 - 87,0				
B 143 PS / 2500		min^{-1}							
1250	84,0 - 86,0	1270		800	79,5 - 82,5				
F 148 PS / 2400		min^{-1}							
1200	86,0 - 88,0	1220		800	84,0 - 87,0				
B 141 PS / 2400		min^{-1}							
1200	82,0 - 84,0	1220		800	79,5 - 82,5				
F 146 PS / 2300		min^{-1}							
1150	84,0 - 86,0	1170		800	84,0 - 87,0				
B 139 PS / 2300		min^{-1}							
1150	81,0 - 83,0	1170		800	79,5 - 82,5				
A 125 PS / 2300		min^{-1}							
1140	80,0 - 83,0		-----	1150	74,0 - 76,0				
F 143 PS / 2200		min^{-1}							
1100	84,0 - 86,0	1120		800	84,0 - 87,0				
B 137 PS / 2200		min^{-1}							
1100	81,0 - 83,0	1120		800	79,5 - 82,5				
A 134 PS / 2200		min^{-1}							
1090	80,5 - 83,5		-----	1100	74,0 - 76,0				
F 140 PS / 2100		min^{-1}							
1050	85,0 - 87,0	1070		800	84,0 - 87,0				
B 134 PS / 2100		min^{-1}							
1050	82,0 - 84,0	1070		800	79,5 - 82,5				
A 122 PS / 2100		min^{-1}							
1040	80,5 - 83,5		-----	1050	76,0 - 78,0				
F 135 PS / 2000		min^{-1}							
1000	86,0 - 88,0	1020		800	84,0 - 87,0				
B 130 PS / 2000		min^{-1}							
1000	81,0 - 83,0	1020		800	79,5 - 82,5				
A 119 PS / 2000		min^{-1}							
990	80,5 - 83,5		-----	1000	73,0 - 75,0				
B 123 PS / 1800		min^{-1}							
900	82,0 - 84,0	910		750	78,5 - 81,5				
A 112 PS / 1800		min^{-1}							
890	89,5 - 92,5		-----	900	75,0 - 77,0				
B 110 PS / 1500		min^{-1}							
750	86,0 - 88,0	760		650	74,0 - 77,0				

- A 100 PS See page 4

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

A 100	BHP at 1500 min/1		
740	87.5 - 90.5	------ 750	86.0 - 88.0

The nameplate described on MWM 1.5 a has recently been expanded - in columns n = rotational speed and Q = full-load fuel delivery - to include two rotational speeds and two fuel deliveries, to enable more exact adjustment in the case of regulators with torque control.

Accordingly - in deviation from VDT-WPP 001/4, 1st addendum, Adjustment of the Regulator and the Pump - the following points will apply:

(1) Adjustment of the control spring: remains.

(2) Adjustment of the full-load fuel delivery: in accordance with nameplate, n = (1st rotational speed) and Q = (1st fuel delivery), or according to Sect. C, Columns 1-2.

(3) Adjustment of the torque control: is adjusted until the control-rod travel is changed as indicated in (2), or according to the new nameplate, until the 2nd fuel delivery is obtained at the 2nd rotational speed; or accordance with Section C, Columns 4-5.

(6) Start of speed regulation: is readjusted according to the nameplate n = (1st rotational speed + 20 min/1) or Column 3.
However, for A-power output: readjust until the fuel delivery as shown in Columns 4-5 has been attained.

New pumps from the warehouse in Stuttgart do not have the spring retainer!
For that reason, use the old spring retainers, or order new ones from MWM in accordance with the old nameplate!

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 r 4
4. Edition
En

PES 6 A 90 D 410 RS 2293 RSV 350-750 AOB 741 L
AOC 741 L
Komb.-Nr. 0 400 876 261

supersedes 11.82
company Daimler-Benz
engine: OM 352 A
62,5 kW (85 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
700	10,9+0,1	6,3 - 6,5	0,3(0,45)			
350	7,9-8,1	1,9 - 2,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	ca. 19	350	8,0	-	-
	x = 20						350	7,9-8,1		
							370-430	=2,0		
ca.31 (5)	9,9	750-755						**		
	4,0	788-801								
	820	0,3-1,7								

** Set idle-speed auxiliary spring at 2 mm control-rod travel!

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...						Control rod travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
700	63,0-65,0 (61,0-67,0)	750 *	-	-	100	78,0-88,0 (75,0-91,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

8.85

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F22

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 5,7 q 5
4. Edition
En

PES 6 A 90 D 410 RS 2293 RSV 350-1400 A 0 B 788 DL

Komb.-Nr. 0 400 876 258

H = 22,5 mm

supersedes 6.83
company Daimler-Benz
engine OM 352 A
124 kW (168 PS)
Unimog

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1400	11,3+0,1	7,4 - 7,5	0,3(0,45)			
350	6,7-6,9	0,5 - 1,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	19-21	350	6,3	1400	11,3-11,4
	x = 5,0								500	11,5-11,6
							100	min.19,0		
67-70	10,3	1440-1450					350	6,7-6,9		
(2a)	4,0	1500-1530					530-590	= 2,0		
	1600	0,3-1,7					700	max.1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1440-1450*	LDA	0,7 bar	100	78,0-88,0	-	-
1400	74,0-75,0		500	62,0-64,0		(75,0-91,0)		
	(72,0-77,0)			(60,0-66,0)		- 14,8 -		
			LDA	0 bar		15,2 mm R7		
			500	54,0-56,0				
				(52,0-58,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

8.85

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F23

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES6A.. RS 2293	0		10,8 - 10,9
with.. AOB 788 DL		0,38	11,1 - 11,2
		0,70	11,5 - 11,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at	0,4 - 0,5 bar
Unlocking at	0,15 - 0,25 bar

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 1 d

4. Edition

En

Testoil-ISO 4113

PE 6 A 95 D 410 LS 2450
PE 8 A 95 D 410 LS 2451
PE 10 A 95D610/4 LS 2452
PE 12 A 95 D 610 LS 2453

See page 2

RQ..929,930,984D, 986D,987D
RQV..898,931,973,974,975
976,983D,988D, 990D,
996,999, 1006D, 1009, 1014,
1016,1020,1021,1026D
EP/RSV..1002D, 1084

supersedes 11.83
company K H D
engine: F 6 L 413F/ FW
8
10
12

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,5 - 8,0	0,4			
	6	3,2 - 4,2				
200	6	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
page	3-8					(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
page	9 - 22							

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.85

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G1

GA

INSTRUCTIONS

1. Contents

2. Cam sequence and angular cam spacing

6 cyl. 1 - 6 - 5 - 4 - 3 - 2 - 1
0 - 75 - 120 - 195 - 240 - 315 - 360°

8 cyl. 1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 - 1
0 - 45 - 90 - 135 - 180 - 225 - 270 - 315 - 360°

10 cyl. 1 - 10 - 9 - 4 - 3 - 6 - 5 - 8 - 7 - 2 - 1
0-27-72-99-144-171-216-243-288-315-160°

12 cyl. 1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12 - 1
0-15-60-75-120-135-180-195-240-255-300-315-360°

3. Instructions for testing

to Section B:

Torque control dimension a = .. -section C, column 8 as required for trials no. for pre-adjustment. Final dimension to be set according to fuel-delivery characteristics in Section C, column 4-5. Further instructions for trials no. will follow on a separate information sheet.

to Section C:

If supplied, the control-rod stop with RQV governors must be set with a torque control of n= 600/min.

B. Governor Settings

RQ..

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

300 1325 AB 929L, 930L

650	15,6-16,0	650	16,0	1350 1400 1440 1500	15,6-16,0 5,0-12,2 0 - 7,0 0 - 1,5	580	0	200 300 400 480	6,4-8,1 4,4-6,5 1,2-3,5 0	-	-

Torque-control travel on flyweight assembly dimension a = - mm Speed regulation At 1 mm less control rod travel

300/1250 AB 929L

650	15,6-16,0	650	16,0	1270 1300 1350 1420	15,6-16,0 10,0-14,8 0 - 8,0 0 - 1,5	580	0	200 300 400 480	6,3-8,1 4,2-6,2 0,8-3,2 0	-	-

Torque-control travel on flyweight assembly dimension a = - mm Speed regulation At 1 mm less control rod travel

300/1250 AB984DL, 987DL

650	15,6-16,4	650	16,0	1290 1320 1340 1420	13,0-15,4 6,0-13,7 0 - 10 0	570	0	200 350 410 470	6,5-8,1 2,8-5,0 0,6-3,2 0	750 900	15,8-16,0 15,3-15,6

Torque-control travel on flyweight assembly dimension a = 0,3 mm Speed regulation At 1 mm less control rod travel

300/1250 AB986DL

650	15,6-16,4	650	16,0	1300 1320 1340 1420	11,0-15,0 6,4-12,5 0 - 9,6 0	660	0	200 300 410 560	6,1-8,2 4,0-6,0 0 -2,4 0	800 950	15,6-15,9 15,0-15,4

Torque-control travel on flyweight assembly dimension a = 0,3 mm Speed regulation At 1 mm less control rod travel

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At 1 mm less control rod travel

G3

En

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
300-1325 AB 898L										
ca. 68	1350 1430 1520 1600	15,0-18,0 8,3-13,0 0 - 6,6 0	-	-	-	ca.12	200 300 500 890	7,5-9,0 4,9-7,1 2,7-4,2 0	250 800 1350 -	0,3-1,2 3,6-4,1 8,2 -
300-1250 AB 898L										
ca. 68	1300 1380 1450 1540	14,5-17,6 6,8-12,4 0 - 7,2 0	-	-	-	ca.12	200 300 500 840	7,3-9,0 4,9-7,1 2,3-4,8 0	250 800 1290 -	0,3-1,3 3,4-4,2 8,2 -
300-1150 AB 898L										
ca.68	1160 1220 1290 1370	15,0-18,0 8,2-13,6 0 - 7,3 0	-	-	-	ca.12	200 450 650 800	7,3-9,0 2,7-4,1 0,7-1,8 0	250 1160 -	0,3-1,3 8,3 -
300-1075 AB 898L										
ca. 68	1160 1240 1320 1400	15,0-18,0 8,0-13,2 0 - 7,2 0	-	-	-	ca.12	200 300 500 710	7,5-9,0 5,1-7,0 1,1-2,4 0	250 700 1170 -	0,3-1,2 4,0-4,5 8,3 -
300/725-1075 AB 931L										
ca.68	1075 1100 1160 1220	15,0-17,3 11,0-15,4 0 - 7,4 0	ca.48	700 800 900 950	11,6-16,5 7,0-11,4 1,7- 4,5 0	ca.12	140 300 450 700 830	6,8-8,2 4,7-6,1 3,6-4,0 1,7-3,9 0	200 400 650 900 1075 -	0,2-0,8 1,9-2,1 1,9-2,6 4,6-5,2 8,5 -

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
300-800/100 AB 973DL									**torque-control travel Maß a = 0,7 mm**	
ca. 50	1180	15,0-18,4	ca. 27	600	11,8-14,7	ca.13	150	8,4-11,5	200	0,5-1,2
	1250	6,8-12,0		700	7,6-10,3		250	5,7-8,8	600	3,2-3,6
	1300	0 - 7,6		840	0 - 2,4		420	0 - 3	1050	7,4-7,6
	1380	0		880	0		530	0	1170	8,3
									650	0
									400	0,7
300-1325 AB 974 L										
ca. 66	1325	15,0-17,8	-	-	-	ca. 10	150	6,6-8,0	1325	8,3
	1400	8,3-12,9					300	4,6-6,1		
	1480	0 - 6,8					450	2,7-3,8	—	—
	1560	0					600	1,8-3,2		
							860	0		
300-985/1325 AB 975L										
ca. 68	1350	12,0-16,0	ca. 61	900	12,4-15,3	ca. 12	100	6,8-8,0	460	2,0-2,5
	1420	4,4-11,0		1000	5,4-8,1		250	5,6-7,2	1300	8,5
	1460	0 - 8,0		1100	0,5-1,0		400	3,3-4,8		
	1560	0		1300	0,5-1,0		600	0,8-2,2	—	—
				1380	0		710	0		
RQV 300-1325 AB976L										
ca. 68	1350	15,2-17,8	-	-		ca. 12	100	min. 8	300	1,2-1,3
	1700	0 - 1					300	5,4-5,6	600	4,4-4,6
ca. 59	1375	9,4-10,4					400	1,5-3,7	1350	8,3
	1475	2,7-4,6					500	0 - 1		
									-	-

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
300-1250 AB983DL, 990DL								torque-control travel Maß a = 0,5 mm		
ca.66	1290	15,0-18,0	-	-	-	ca. 12	100	7,6-8,6	1290	8,3
	1370	7,5-12,7					300	5,2-6,6		
	1440	0 - 7,7					600	2,0-3,2	1200	0
	1530	0					850	0	600	0,5-0,6
300-1075 AB988DL								torque-control travel Maß a = 0,5 mm		
ca. 68	1100	15,0-18,0	-	-	-	ca. 12	100	6,2-8,0	1100	8,3
	1190	4,1-10,4					300	4,4-6,2		
ca. 66	1075	15,0-18,0					500	1,8-3,3	1075	0
	1140	8,0-13,0					720	0	500	0,5-0,6
	1200	0 - 8								
	1280	0								
RQV 300-1075 AB988DL								torque-control travel Maß a = 0,5 mm		
ca. 68	1160	15,0-18,0	-	-	-	ca. 12	200	7,5-9,0	250	0,3-1,2
	1240	8,0-13,2					300	5,1-7,0	700	4,0-4,5
	1320	0 - 7,2					500	1,1-2,4		
	1400	0					710	0	1080	0
									500	0,5-0,6
RQV 1150 AB999L (V13274)										
ca.48	1100	14,6-20,5	-	-	-	-	-	-	1150	5,4
	1150	8,3-13,0								
	1200	0 - 4,5							—	—
RQV 300-1000 AB1006DL (V13121D)								torque-control travel Maß a = 0,5 mm		
ca. 68	1100	14,0-17,6	-	-	-	ca.12	200	7,5-8,9	250	0,3-1,1
	1180	6,2-12,0					300	4,5-7,0	600	3,8-4,4
	1250	0 - 6					450	1,0-2,3	1080	8,2
							650	0		
									1000	0
									600	0,5-0,6

B. Setting values for the governor RQV

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11

RQV 300/525-750 AB1009L (V13157)

ca.68	760 800 815 850	15,0-18,4 4,2-11,0 0 -8,0 0	ca. 52	525 600 650 700	14,0-20,0 7,9-12,2 3,0-6,2 0	ca.12	175 300 400 600	7,1-8,2 4,0-6,3 3,6-4,0 0	250 400 600 760 –	0,3-1,2 1,9-2,1 3,7-4,5 8,3 –

RQV 300-800/1325 AB1014L

ca.46	1330 1420 1500 1590	18,0-21,6 9,2-14,8 0 - 8 0	ca.30	600 720 840 880	11,9-14,3 6,6-9,0 0 -2,3 0	ca.10	100 300 400 510	9,4-12,2 4,1-7,9 0 - 3 0	150 700 1020-1300 1330 -	0,8-1,4 4,0-4,4 7,4-7,6 7,8 -

RQV 300/800-1150 AB1016L (V12264), 1021 (V13155)

ca.66	1160 1200 1250 1310	15,0-18,4 8,4-13,8 0 - 7,6 0	ca.48	760 850 950 1030	11,2-16,4 7,6-11,8 2,8-5,6 0	ca.12	200 450 650 900	6,1-7,7 3,6-4,0 3,3-4,0 0	250 400-600 1160 -	0,5-1,2 1,9-2,1 8,2 -

RQV 300/650-900 AB1020L (V12263)

ca.66	910 980 1020	15,0-18,4 0 - 7,5 0	ca.48	610 700 790 810	11,6-16,5 6,0-9,8 0 -2,0 0	ca.12	200 400 600 720	6,8-8,2 3,6-4,6 1,8-4,0 0	250 450-500 910 -	0,3-1,0 1,9-2,1 8,3 -

RQV 300-1250 AB1026DL torque-control travel MaB a = 0,5 mm

ca.68	1300 1380 1450 1540	14,5-17,6 6,8-12,4 0 - 7,2 0	-	-	-	ca.12	200 300 500 840	7,3-9,0 4,9-7,1 2,3-4,8 0	250 800 1290 1250 500	0,3-1,3 3,8-4,2 8,2 0 0,5-0,6

Upper rated speed			Intermediate rated speed			Lower rated speed			Torque-control travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
300-1325 A8 B 1084L										
ca.69	1325	16,0	without auxiliary spring			ca.23	300	6,0	1300	0
	1400	7,7					100	19,0-21,0		
	1450	1,0					300	5,7-6,3	350	1,2-1,8
	1370	10,4-12,3					450	0,8-2,9		
	1430	2,8-6,0	with auxiliary spring				600	0 -1,0		
	1550	0,3-1,0								
300-1000 A7 B1002DL A7C										
ca.72	1000	16,0	without auxiliary spring			ca.23	300	6,0	980	0
	1030	12,6					100	19 - 21	400	0,8-1,0
	1070	5,4					300	5,7-6,3		
	1050	7,0-10,2					400	3,0-4,4		
	1100	2,0-4,4	with auxiliary spring				550	0 - 1		
	1200	0,3-1,0								
300-1325 A8 B1002DL A8C										
ca.69	1325	16,0	without auxiliary spring			ca.25	300	6,0	1300	0
	1380	10,2					150	19 - 21		
	1420	5,4					300	5,7-6,3	450	0,8-1,0
	1330	ca.10,5					500	1,7-3,8		
	1370	ca. 9,5	with auxiliary spring				700	0 - 1		
	1520	0,3-1,0								

C. Settings for Fuel Injection Pump with Fitted Governor

Testoil-ISO 4113

Full-load delivery Test oil temp 40°C (104°F)		Rotational-speed limitation RQV / Control-rod stop RQ	Fuel delivery charactenstics		Starting fuel delivery	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes
1	2	3	4	5	6	7
F 6 L 413 F - 141kW/192PS / 2650/min						
1325	91,5-93,5	RQ: 600 RQV: 1340	1000 800	88,5-91,5 87,5-90,5	100	119-129
F 8 L 413 F - 188kW/192 PS / 2650/min						
1324	91,5-93,5	RQ: 600 RQV: 1340	1000 800	88,5-91,5 87,5-90,5	100	119-129
F 10 L 413 F - 236kW/320PS / 2650/min						
1325	91,5-93,5	RQ: 600 RQV: 1340	1000 800	88,5-91,5 87,5-90,5	100	119-129
F 12 L 413 F - 284kW/384PS / 2650/min						
1325	91,5-93,5	RQ: 600 RQV: 1340	1000 800	88,5-91,5 87,5-90,5	100	119-129

Caution: These changed values apply to governors without torque control

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Test oil temp 40°C (104°F)		Rotational-speed limitation RQV / Control-rod stop RQ	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes
1	2	3	4	5	6	7
192 PS / 2650 min - RQ 300/1325 AB 929 L						
1325	91,5-93,5	600	400 max.	84,5	100	119-129
192 PS / 2500 min - RQ 300/1250 AB 987 DL						a = 0,2 mm
1250	91,5-93,5	600	700 400	92,5-94,5 82,5-88,5	100	119-129
186 PS / 2500 min - RQ 300/1250 AB 929 L						
1250	94,5-96,5	600	400 max.	84,5	100	119-129
176 PS / 2500 min - RQ 300/1250 ABV 12946D						a = 0,3 mm
1250	85,5-87,5	600	1000 700	83,5-86,5 86,5-89,5	100	119-129
168 PS / 2500 min - RQ 300/1250 ABV 12946 D						a = 0,3 mm
1250	75,5-77,5	600	1000 700	73,5-76,5 71,5-74,5	100	119-129
176 PS / 2300 min - RQ 300/1150 ABV 12242 D						a = 0,35 mm
1150	83,5-85,5	600	1000 700	81,5-84,5 85,5-88,5	100	119-129
160 PS / 2150 min - RQ 300/1075 ABV 12243 D						a = 0,35 mm
1075	82,5-84,5	600	1000 700	80,5-83,5 83,5-86,5	100	119-129

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Test oil temp 40°C (104°F)		Rotational-speed limitation RQV / Control-rod stop RQ	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes
1	2	3	4	5	6	7

1. 141kW/192PS / 2650/min - RQV 300-1325 AB974L, 300-950/1325 AB975L

1325	91,5-93,5	1365-1375*	400	max. 84,5	100	119-129	

2. 141kW/192PS / 2500/min - RQV 300-1250 AB13392D, 300-800/1250 ABV13776D a = 0,5 mm

1250	91,5-93,5	1290-1300*	1000	91,0-94,0	100	119-129	770=4,5 (13776D)
			700	91,5-94,5			

3. 137kW/186PS / 2500/min - RQV 300-1250 ABV12248

1250	90,5-92,5	1290-1300*	400	max. 84,5	100	119-129	

4. 130kW/176PS / 2500/min - RQV 300-1250 AB983DL (V13122D) a = 0,5 mm

1250	85,5-87,5	1290-1300*	1000	83,5-86,5	100	119-129	
			400	78,5-82,5			

5. 107kW/145PS / 2400/min - RQV 300-1200 ABV 12259D

1250	71,5-73,5	1240-1250*	1000	68,0-71,0	100	119-129	
			700	67,0-70,0			

6. 124kW/168PS / 2300/min - RQV 300/800-1150 AB1021L (V13155)

1150	84,5-86,5	1190-1200*			100	119-129	

7. 124kW/168PS / 2300/min - RQV 300-1150 AB999L (V132274)

1150	85,5-87,5	1190-1200*			100	119-129	
					1196	17-20	

8. 101kW/137PS / 1800/min - RQV 300-900 ABV13156

900	79,5-81,5	940-950*	400	max. 82,5	100	119-129	

9. 101kW/137PS / 1800/min - RQV 900 ABV 13273

900	80,5-82,5	910	936	17-20	100	119-129	

10. 90kW/116PS / 1500/min - RQV 300/525-750 AB1009L (V13157)
RQV 750 ABV12507

750	78,5-80,5	790-800*	400	max.76,5	100	119-129	

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C. Settings for Fuel Injection Pump with Fitted Governor

Testoil-ISO 4113

Full-load delivery Test oil temp 40°C (104°F)		Rotational-speed limitation RQV / Control-rod stop RQ	Fuel delivery charactenstics		Starting fuel delivery	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes
1	2	3	4	5	6	7

1. 141kW/192PS / 2650/min -EP/RSV 300-1325 A 8 B 1084 L

1325	91,5-93,5	1365-1375*	400	max.82,5	100	119-129	

2. 141kW/192PS / 2650/min -EP/RSV 300-1325 A 8 B 1002 DL

1325	91,5-93,5	1365-1375*	400	max.82,5	100	119-129	

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F 6 L 413 FW

6.1 121kW/165PS / 2500/min - RQV 300-1250 ABV 13925 D a = 0,5 mm

2. 108kW/147PS / 2500/min

1. 1250	79,5-81,5	1290-1300*	800	78,0-81,0	100	119-129	
2. 1250	74,5-76,5	1290-1300*	800	71,0-74,0	100	119-129	

7.1. 115kW/156PS / 2300/min - RQV 300-1150 ABV 13926 D a = 0,5 mm

2. 96kW/131PS / 2300/min

1. 1150	78,5-80,5	1190-1200*	800	78,0-81,0	100	119-129	
2. 1150	68,5-70,5	1190-1200*	800	68,0-71,0	100	119-129	

8.1. 101kW/137PS / 2150/min - RQV 300-1075 ABV 13927 D a = 0,5 mm

2. 91kW/124PS / 2150/min

1. 1075	73,5-75,5	1115-1125*	800	74,0-77,0	100	119-129	
2. 1075	67,5-69,5	1115-1125*	800	68,0-71,0	100	119-129	

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C. Settings for Fuel Injection Pump with Fitted Governor

Testoil-ISO 4113

Full-load delivery Test oil temp 40°C (104°F)		Rotational-speed limitation RQV Control-rod stop RQ	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes
1	2	3	4	5	6	7

1. 188kW/256PS / 2650/min - RQ 300/1325 AB 929 L (V 11708)

1325	91,5-93,5	600	400	max. 84,5	100	119-129

---

2. 188kW/256PS / 2500/min - RQ 300/1250 AB 987 DL (V 13391 D) a = 0,2 mm

1250	91,5-93,5	600	700	90,5-93,5	100	119-129
			400	82,5-88,5		

---

3. 183kW/248PS / 2500/min - RQ 300/1250 AB 929 L (V 12241)

1250	91,5-93,5	600	400	max. 84,5	100	119-129

---

4. 173kW/235PS / 2500/min - RQ 300/1250 ABV 12946 D a = 0,3 mm

1250	85,5-87,5	600	700	83,5-86,5	100	119-129
			400	max. 84,5		

---

5. 173kW/235PS / 2300/min - RQ 300/1150 ABV 12242 D a = 0,35 mm

1150	87,5-89,5	600	1000	88,0-91,0	100	119-129
			700	88,0-91,0		
			400	max. 84,5		

---

6. 157kW/213PS / 2150/min - RQ 300/1075 ABV 12243 D a = 0,3 mm

1075	82,5-84,5	600	1000	81,5-84,5	100	119-129
			700	84,5-87,5		
			400	max. 84,5		

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Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Test oil temp 40°C (104°F)		Rotational-speed limitation RQV Control-rod stop RQ	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes
1	2	3	4	5	6	7

1. 188kW/256PS / 2650/min - RQV 300-1325 AB 974 L (12247), 976 L (12630)
AB 1014 L (13605), 13629
1014

1325	91,5-93,5	1365-1375*	400	max.84,5	100	119-129	770=4,5mmRW

---

2. 188kW 256PS / 2500/min - RQV 300-1250 AB 990 DL (V 13392 D), 14020 D
RQV 300-800/1250 ABV 13776 D a = 0,5 mm

			1000	91,0-94,0			
1250	91,5-93,5	1290-1300*	700	91,5-94,5	100	119-129	

---

3. 184 kW/248PS / 2500/min - RQV 300-1250 AB 974 L (V 12248)

1250	90,5-92,5	1290-1300*	400	max.84,5	100	119-129	

---

4. 173kW/235PS / 2500/min. - RQV 300-1250 AV 983 DL (V 13122 D) a = 0,5 mm

1150	85,5-86,5	1290-1300*	1000	83,5-86,5	100	119-129	
			700	86,5-89,5			

---

5. 173 kW/235PS / 2300/min - RQV 300-1150 ABV 13777 D a = 0,5 mm

1150	84,5-86,5	1190-1200*	1000	82,5-85,5	100	119-129	
			700	86,5-89,5			

---

6. 165kW/224PS / 2300/min - RQV 300/800-1150 AB 1021 L (13155)

1150	84,5-86,5	1190-1200*	400	max.84,5	100	119-129	

---

7. 165kW/225PS / 2300/min - RQV 1150 AB 999 L (V 13274)

1150	85,5-87,5	1160			100	119-129	
					1196	17-20	

---

8. 165kW/225PS / 2200/min - RQV 300-800/1100 AB 973 DL (V 13230 D) a = 0,7 mm

1100	85,5-87,5	1140-1150*	1000	84,0-87,0	100	119-129	770=4,5 mm RW
			700	90,0-93,0			

---

9. 132kW/180PS / 2150/min - RQB 300-1075 ABV 13944 D a = 1,2

1075	71,5-73,5	1115-1125*	1050	70,0-73,0	100	119-129	
			800	83,0-86,0			

---

10. 134kW/182PS / 1800/min - RQV 300/650-900 ABV 13156

900	79,5-81,5	910	400	max.83,5	100	119-129	

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Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Test oil temp 40°C (104°F)		Rotational-speed limitation RQV / Control-rod stop RQ	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes
1	2	3	4	5	6	7

11. 134kW/182PS / 1800/min - RQV 900 ABV 13273

900	80,5-82,5	910			100	119-129
					936	17-20

12. 114kW/155PS / 1500/min - RQV 300/525-750 AB 1009 L (V 13157)

750	78,5-80,5	760	400	max. 82,5	100	119-129

13. 114kW/155PS / 1500/min - RQV 750 ABV 12507

750	78,5-80,5	760			100	119-129

F 8 L 413 FW

16. 1. 162kW/220PS / 2500/min - RQV 300-1250 ABV 13925 D a = 0,5 mm
    2. 144kW/196PS / 2500/min

1.	1250 79,5-81,5	1290-1300*	800	78,0-81,0	100	119-129
2.	1250 74,5-76,5	1290-1300*	800	71,0-74,0	100	119-129

17. 1. 153kW/208PS / 2300/min - RQV 300-1150 ABV 13926 D a = 0,5 mm
    2. 129kW/175PS / 2300/min

1.	1150 78,5-80,5	1190-1200*	800	78,0-81,0	100	119-129
2.	1150 68,5-70,5	1190-1200*	800	68,0-71,0	100	119-129

18. 1. 135kW/184PS / 2150/min - RQV 300-1075 ABV 13927 D a = 0,5 mm
    2. 121kW/164PS / 2150/min

1.	1075 73,5-75,5	1115-1125*	800	74,0-77,0	100	119-129
2.	1075 67,5-69,5	1115-1200*	800	68,0-71,0	100	119-129

C. Settings for Fuel Injection Pump with Fitted Governor

Testoil-ISO 4113

Full-load delivery Test oil temp 40°C (104°F)		Rotational-speed limitation RQV / Control-rod stop RQ	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes
1	2	3	4	5	6	7

1. 188kW/256PS / 2650/min - EP/RSV 300-1325 A 8 B 1084 L

   1325 91,5-93,5 1365-1375* 400 max. 84,5 100 119-129

2. 188kW/256PS / 2500/min -EP/RSV 300-1325 A 8 B 1002 DL

   1325 91,5-93,5 1365-1375* 400 max. 84,5 100 119-129

3. 147kW/200PS / 1900/min - EP/RSV 300-1000 A 7 B 1002 DL
   A 7 C 1002 DL

   950 79,5-81,5 990-1000* 700 80,5-83,5 100 119-129
   400 max. 84,5

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C: Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Test oil temp 40°C (104°F)		Control-rod stop	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
1. 236kW/320PS / 2650/min - RQ 300/1325 (V11709)								
1325	91,5-93,5	600	400	max.84,5	100	119-129		
2. 236kW/320PS / 2500/min - RQ 300/1250 AB984DL								a = 0,2 mm
1250	91,5-93,5	600	1000 700	91,0-94,0 91,5-94,5	100	120-130		
3. 228kW/310PS / 2500/min - RQ 300/1250 ABV12244								
1250	89,5-91,5	600	400	max.84,5	100	119-129		
4. 217kW/295PS / 2500/min - RQ 300/1250 AB986DL (V13159D)								a = 0,3 mm
1250	86,5-88,5	600	1000 700	84,5-87,5 87,5-90,5	100	119-129		
5. 216kW/293PS / 2300/min - RQ 300/1150 ABV12245D								a = 0,35 mm
1150	84,5-86,5	600	1000 700	82,5-85,5 86,5-89,5	100	119-129		
6. 197kW/267PS / 2150/min - RQ 300/1075 ABV12246D								a = 0,35 mm
1075	83,5-85,5	600	1000 700	81,5-84,5 84,5-87,5	100	119-129		
7.								
8.								
9.								

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

C: Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
1. 236kW/320PS / 2650/min			- RQV 300-1325 AB 898L (V12249) 300-800(1325 ABV12271					
1325	91,5-93,5	1365-1375*	400	max. 84,5	100	119-129		
2. 228kW/310PS / 2550/min			- RQV 300-1275 ABV13664D					a = 0,5 mm
1275	90,5-92,5	1315-1325*	1000	90,5-92,5	100	119-129		
			700	91,0-94,0				
3. 236kW/320PS / 2500/min			- RQV 300-1250 AB1026DL					a = 0,5 mm
1250	91,5-93,5	1290-1300*	1000	91,0-94,0	100	119-129		
			700	90,0-93,0				
4. 228kW/310PS / 2500/min			- RQV 300-1250 AB898L (V11962)					
1250	90,5-92,5	1290-1300*	400	max. 84,5	100	119-129		
5. 217kW/295PS / 2500/min			- RQV 300-1250 ABV13118D					a = 0,5 mm
1250	86,5-88,5	1290-1300*	1000	84,5-87,5	100	119-129		
			700	87,5-90,5				
6. 193kW/262PS / 2500/min			- RQV 300/850-1250 ABV12294					
1250	79,5-81,5	1290-1300*	400	max. 82,5	100	119-129		
7. 215kW/294PS / 2399/min			- RQV 300-1150 AB988DL (V13119D)					a = 0,5 mm
1150	84,5-86,5	1190-1200*			100	119-129		
			700	83,0-86,0				
			400	75,0-79,0				
8. 216kW/293 / 2300/min			- RQV 300/800-1150 AB 1016L (V12264)					
1150	84,5-86,5	1190-1200*	400	max. 82,5	100	119-129		
9. 206kW/280PS / 2300/min			- RQV 300-1150 AB898L					
1150	79,5-81,5	1190-1200*	400	max. 82,5	100	119-129		
10. 197kW/267PS / 2150/min			- RQV 300-1075 AB 988DL (V13120D)					a = 0,5 mm
1075	83,5-85,5	1115-1125*	1000	81,5-84,5	100	119-129		
			700	84,5-87,5				
			400	max. 82,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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G18

C: Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
11. 197kW/267PS / 2150/min - RQV 300/750-1075 AB931L (V12575)								
1075	83,5-85,5	1115-1125*	400	max. 82,5	100	119-129		
12. 184kW/250PS / 2000/min - RQV 300-1000 AB1006DL (V13121D)								a = 0,5 mm
1000	80,5-82,5	1040-1050*	700	83,5-86,5	100	119-129		
13. 184kW/250PS / 2000/min - RQV 300-1000 ABV13550								
1000	80,5-82,5	1040-1050*	400	max. 82,5	100	119-129		
14. 168kW/228PS / 1800/min - RQV 300/650-900 AB1020L (V12263)								
900	80,5-82,5	940-950*	400	max. 82,5	100	119-129		
15. 142kW/193PS / 1800/min - RQV 300/525-750 AB998L (V12262)								
750	78,5-80,5	790-800*	400	max. 82,5	100	119-129		
F 10 L 413 FW								
16.1. 202kw/275PS / 2500/min - RQV 300-1250 ABV13928D								a = 0,5 mm
2. 180kW/245PS / 2500/min								
1.	1250 79,5-81,5	1290-1300*	800	78,0-81,0	100	119-129		
2.	1250 74,5-76,5	1290-1300*	800	71,0-74,0	100	119-129		
17.1. 192kW/261PS / 2300/min - RQV 300-1150 ABV13929D								a = 0,5 mm
2. 161kW/219PS / 2300/min								
1.	1150 78,5-80,5	1190-1200*	800	78,0-81,0	100	119-129		
2.	1150 68,5-70,5	1190-1200*	800	68,0-71,0	100	119-129		
18.1 168kW/228PS / 2150/min - RQV 300-1075 ABV13930D								a = 0,5 mm
161kW/219PS / 2150/min								
1.	1075 73,5-75,5	1115-1125*	800	74,0-77,0	100	119-129		
2.	1075 67,5-69,5	1115-1125*	800	67,0-70,0	100	119-129		

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

En
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C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Test oil temp 40°C (104°F)		Control-rod stop	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
1. 283kW/384PS / 2650/min - RQ 300/1325 AB930L (V11709)								
1325	91,5-93,5	600	400	max 84,5	100	119-129		
2. 283kW/384PS / 2500/min - RQ 300/1250 AB984DL (V13407D)								a = 0,2 mm
1250	91,5-93,5	600	1000 700 400	91,0-94,0 91,5-94,5 82,5-88,5	100	119-129		
3. 274kW/372PS / 2500/min - RQ 300/1250 AB930L (V12244)								
1250	89,5-91,5	600	400	max. 84,5	100	119-129		
4. 260kW/353PS / 2500/min - RQ 300/1250 AB986DL (V13159D)								a = 0,3 mm
1250	86,5-88,5	600	1000 700 400	84,5-87,5 87,5-90,5 max. 82,5	100	119-129		
5. 259kW/352PS / 2300/min - RQ 300/1150 ABV 12245D								a = 0,35 mm
1150	84,5-86,5	600	1000 700 400	82,5-85,5 86,5-89,5 max. 82,5	100	119-129		
6. 236kW/320PS / 2150/min - RQ 300/1075 ABV12246D								a = 0,35 mm
1075	83,5-85,5	600	1000 700 400	81,5-84,5 84,5-87,5 max. 82,5	100	119-129		

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

1. 283kW/384PS / 2650/min - RQV 300-1325 AB898L (V12249)

1325	91,5-93,5	1365-1375*	400	max.84,5	100	119-129	

2. 283kW/384PS / 2500/min - RQV 300-1250 AB1026DL (V13408D) a = 0,5 mm

1250	91,5-93,5	1290-1300*	1000	91,0-94,0	100	119-129	
			700	91,5-94,5			

3. 274kW/372PS / 2500/min - RQV 300-1250 AB898L

1250	89,5-91,5	1290-1300*	400	max.84,5	100	119-129	

4. 260kW/353PS / 2500/min - RQV 300-1250 ABV 13118D a = 0,5 mm

1250	86,5-88,5	1290-1300*	1000	84,5-87,5	100	119-129	
			700	87,5-90,5			
			400	max. 82,5			

5.1 246kW/335PS / 2500/min
2. 147kW/200PS / 2500/min - RQV 300-1250 ABV 13287D a = 0,55 mm

1. 1250	82,5-84,5	1290-1300*	1000	80,5-83,5			
			700	84,0-87,0	100	119-129	
2. 1250	50,5-52,5		1000	50,0-53,0			
			700	39,0-42,0			

6. 243kW/330PS / 2500/min - RQV 300-1250 ABV 13621D a = 0,5 mm

1250	78,5-80,5	1290-1300*	1000	77,0-80,0	100	119-129	
			700	73,0-76,0			

7. 259kW/352PS / 2300/min - RQV 300-1150 AB898L, 1016L (V12264)

1150	84,5-86,5	1190-1200*	400	max. 82,5	100	119-129	

8. 259kW/352PS / 2300/min - RQV 300-1150 AB988DL (V13118D) a = 0,5 mm

1150	84,5-86,5	1190-1200*	1000	82,5-85,5	100	119-129	
			700	86,5-89,5			
			700	86,5-89,5			

9. 247kW/336/S / 2300/min - RQV 300-1150 AB962L

1150	83,5-85,5	1190-1200*	400	max.82,5	100	119-129	

10. 236kW/320PS / 2150/min - RQV 300/750-1075 AB931L (V12575)

1075	83,5-85,5	1190-1200*	400	max.82,5	100	119-129	

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
11. 236kw/320PS / 2150/min			- RQV 300-1075 AB988DL (V13120D) ABV13162D					a = 0,5 mm
1075	83,5-85,5	1115-1125*	1000 700 400	81,5-84,5 84,5-87,5 max. 82,5	100	119-129		
12. 199kW/270PS / 2150/min			- RQV 300-1075 ABV13945D					a = 1,2 mm
1075	71,5-73,5	115-1125*	1050 800	70,5-72,5 83,0-86,0	100	119-129		
13. 221kW/300PS / 2000/min			- RQV 300-1000 AB 1006DL (V13121D) ABV13163D					a = 0,5 mm
1000	80,5-82,5	1040-1050*	700	83,5-86,5	100	119-129		
14. 200kW/272PS / 2000/min			- RQV 300-1000 ABV13550					
1000	80,5-82,5	1040-1050*			100	119-129		
15. 202kW/275PS / 1800/min			- RQV 300-900 ABV 13549 300/650-900 ABV12263					
900	80,5-82,5	940-950*			100	119-129		
16. 171kW/232PS / 1500/min			- RQV 300-750 AB998L (V12262)					
750	80,5-82,5	790-800*	400	max. 82,5	100	119-129		
F12 L 413 FW								
17. 1-243kW/330PS / 2500/min 2-216kW/294PS / 2500/min			- RQV 300-1250 ABV13928 D					a = 0,5 mm
1. 1250	79,5-81,5	1290-1300*	800	78,0-81,0	100	119-129		
2. 1250	74,5-76,5	1290-1300*	800	71,0-74,0				
18. 1-230kW/313PS / 2300/min 2-193kW/262PS / 2300/min			-RQV 300-1150 ABV13929D					a = 0,5 mm
1. 1150	78,5-80,5	1190-1200*	800	78,0-81,0	100	119-129		
2. 1150	68,5-70,5	1190-1200*	800	68,0-71,0				
19. 1-202kW/274PS / 2150/min 2-183KW/248PS / 2150/min			-RQV 300-1075 ABV13930D					a = 0,5 mm
1. 1075	73,5-75,5	1115-1125*	800	74,0-77,0	100	119-129		
2. 1075	67,5-69,5	1115-1125*	800	68,0-71,0				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/40MB 7,4 a
5. Edition
En

PES 6 A 90 C 410 RS 2340 .. D ..

RQV 250-1300 AB 803 D
RQV 325-1050 AB 923 D
RQV 250-1300 AB 944 D

supersedes 6.75
company: OM Brescia
engine CP 3

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,8 - 6,3	0,4			
	6	2,5 - 3,4				
	12	10,2 - 11,1				
200	9	3,2 - 4,1				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

RQV.. 803 D

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
ca. 66	1340 1450 1550 1680	15,0-17,4 8,2-12,8 0,5- 7,9 0	-	-	-	ca. 10 ③a	140 250 400 630	6,0-8,0 4,2-6,1 0,2-1,4 0	1340	8,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
1300	74,0-76,0	1320	1000 600	72,5-75,5 64,5-67,5	100	ca.15mmRW	1300 600	0 0,1-0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

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B. Governor Settings

RQV .. 923 D

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
ca. 68	1060 1120 1220 1310	15,0-18,0 9,7-14,4 0 - 7 0		-	-	-	ca. 18 (3a)	150 250 380 670	9,6-11,7 7,4-10,0 2,0- 5,0 0	1060	8,3

Torque control travel a = 0,3 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Testoil-ISO 4113

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1050	77,5 - 78,5 (75,5-80,5)	1090-1100*	500	66,0 - 69,0 (64,0-71,0)	100 Change-over point 200-270 U/min	15,0-15,6mm	RW 1060 600	0 0,3-0,4

Checking values in brackets

* 1 mm less control rod travel than col 2

** With overspeed sensor - adjust so that lamp lights up at n = 1455-1465. After adjusting the sensor, check full load!

B. Governor Settings

RQV .. 944 D

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
ca. 66	1340 1450 1550 1680	15,0-17,4 8,2-12,8 0,5- 7,9 0		-	-	-	ca. 10 (3a)	140 250 400 630	6,0-8,0 4,2-6,1 0,2-1,4 0	1340	8,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min		rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1300	74,0 - 76,0	1340-1350* **	1100 500	73,5 - 76,5 61,0 - 64,0	100	ca. 15mm RW	1300 600	0 0,1-0,3

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 6,1 a

7. edition

..410..

En

PES 6 A 85 D 410/3 RS 2366 RSV 325-1400 A8B 674D, 707D supersedes 1.85
.. RS 2415 A8C 674D, 707D company KHD
.. RS 2532 325-1150 A8B 674D, 707D engine BF 6 L 913
A8C 674D, 707D

Note page 3

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1250	12,4+0,1	8,4-8,5	0,3(0,45)			
325	6,6-6,8	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

C

RSV 325-1400 A 8 B 674 D, 707 D

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,7-1,0	-	-	-	ca. 21	325	6,2	500	13,7-13,8
	x =								1000	13,3-13,5
							100	min.19,0	1400	12,4-12,5
ca. 71	11,4	1440-1450					325	6,6-6,8		
(2a)	4,0	1485-1515					585-645	= 2,0		
	1620	0,3-1,7					700	max.1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limital: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar		LDA	0,7 bar	100	17,6-18,2	325	6,7
*)		*)	*)			mm RW		
			LDA	0 bar				
			500	60,0-63,0				
				(58,0-65,0)				
*) Note page 3								

Checking values in brackets

* 1 mm less control rod travel than col 2

4.85

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H1

B. Governor Settings

EP/RSV 325-1150 A8B674D, 707 D

① Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	④ Control-lever deflection in degrees (7)	Lower rated speed rev/min (8)	Control rod travel mm (9)	③ Torque control rev/min (10)	Control rod travel mm (11)
ca. 56	1150	16,0	without auxiliary spring	ca. 21	325	5,5	1130	0
	1200	11,1			200	19 - 21		
	1250	5,4			325	5,5-5,8	500	1,0-1,2
					500	1,4-3,4		
②a	1220	7,5-10,4	with auxiliary spring		660	0 -1,5		
	1300	1,3-3,6						
	1380	0,3-1,5						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	⑥ Rotational-speed limitat, Note changed to .. rev/min (3)	③a Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery idle ⑤: rev/min (6)	cm³/1000 strokes (7)	④a Idle stop: rev/min (8)	Control rod travel mm (9)
LDA	0,7 bar		LDA	0,7 bar	100	119,5-129,5	325	5,5**
Note page 3								
			LDA	0 bar				
			500	57,5-59,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting: Gauge pressure = bar	Measurement: Gauge pressure = bar	Control rod travel - diminution: mm	difference
all governors	0,38	0,10	0,2 - 0,3	
			1,6 - 2,0	

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

Testoil-ISO 4113

H2

H2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

BF 6 L 913 - PES 6 A D..RS2366, 2415 F or B - output at ... min/1

1400	88,0 - 90,0	1420	800	80,0 - 83,0	160 PS /	n = 2800
1400	84,0 - 86,0	1420	800	66,0 - 69,0	142 PS /	n = 2800
1325	90,5 - 92,5	1340	850	88,5 - 90,5	168 PS /	n = 2650
1325	87,5 - 89,5	1340	800	82,5 - 85,5	160 PS /	n = 2650
1325	82,5 - 84,5	1340	800	67,5 - 70,5	140 PS /	n = 2650
1250	87,0 - 89,0	1270	800	84,5 - 87,5	160 PS /	n = 2500
1250	83,0 - 85,0	1270	800	77,5 - 80,5	148 PS /	n = 2500
1250	81,0 - 83,0	1270	800	75,5 - 77,5	140 PS /	n = 2500
1200	86,0 - 88,0	1220	800	84,5 - 87,5	156 PS /	n = 2400
1200	78,0 - 80,0	1220	800	68,0 - 71,0	135 PS /	n = 2400
1165	84,0 - 86,0	1180	800	84,5 - 87,5	152 PS /	n = 2330
1150	83,5 - 85,5	1165	800	84,5 - 87,5	152 PS /	n = 2300
1150	80,0 - 82,0	1165	800	79,0 - 81,0	142 PS /	n = 2300
1100	82,0 - 84,0	1115	800	84,5 - 87,5	147 PS /	n = 2200
1075	82,0 - 84,0	1090	800	84,5 - 87,5	144 PS /	n = 2150
1075	78,0 - 80,0	1090	800	76,0 - 79,0	136 PS /	n = 2150
1050	76,5 - 78,5	1065	800	73,5 - 76,5	130 PS /	n = 2100
1000	82,5 - 84,5	1015	800	84,5 - 87,5	137 PS /	n = 2000
1000	77,0 - 79,0	1015	800	79,5 - 82,5	130 PS /	n = 2000
900	82,0 - 84,0	910	800	84,5 - 87,5	125 PS /	n = 1800
875	68,0 - 70,0	885	800	66,0 - 69,0	106 PS /	n = 1750
750	85,0 - 87,0	760	-	-	105 PS /	n = 1500
750	78,0 - 80,0	760	-	-	100 PS /	n = 1500

Testoil-ISO 4113

PLEASE NOTE

1. ** With Liebherr excavators: single-lever control, therefore use shorter screw 1 423 400 031 and set this at 0.3 - 1.0 before the stop.

2. LDA adjustment to be carried out according to VDT-W-420/305.

3. Dimension H = 22.5 mm = basic setting of LDA.

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/40 MB 4,4 e
2. Edition
En

PES 4 A 90 D 410 RS 2442 RQV 325-1050 AB 922 D

Komb.-Nr. 0 400 844 066

supersedes
company: 8.75
engine: OMB
CO 3..

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,1 - 5,5	0,4			
	6	1,6 - 2,6				
200	9	1,9 - 2,9				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
ca. 68	1060 1120 1220 1310	15,0-18,0 9,7-14,4 0-7 0	-	-	-	ca. 18 (3a)	150 250 380 670	9,6-11,7 7,4-10,0 2,0- 5,0 0	1060	8,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1050	83,5-84,5 (81,5-86,5	1090-1100*	-	-	100	15,0-15,6 mm RW Change-over point 200-270 U/min	1060 600	0 0,3-0,4

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.85

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H4

H4

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PE 6 A 90 D 410 RS 2524 RSV 250-750 A 7 B 2124 L
Komb.-Nr. 0 400 676 165

supersedes 3.84
company: DAF
engine: DH 825

Cold-start test on EP/RSV governor according to VDT-I-420/114
Values apply to fuel-injection test tubing 1 680 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,25-2,4) 2,30-2,40 mm (from BDC) RW = 9,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	9,4-9,5	7,9- 8,1	0,4(0,55)			
250	6,3-6,5	1,9- 2,5	0,2(0,4)			

Port closing difference between control-rod travel 9 mm and max. 4,5-5,5° camshaft

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 16	250	6,4	-	-
	x =	3,25					100	min.19,0		
							250	**		
(5) ca. 40	770-780 = 8,4 785-805 = 4,0 955=0	3-1,7					260-320=2,0			

** Set idle-speed auxiliary spring at 2 mm control-rod travel, then turn back 1/2 turn.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...						Control rod travel
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
750	78,5 - 80,5 (76,5 - 82,5)	760-770*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

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H5

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 1 g 4
3. Edition
En

PES 6 A 85 D 410/3 RS 2611
Komb.-Nr. 0 400 866 111

RSV 325-1200 AOB 2148 L
AOC 2148 L

supersedes 5.84
company: KHD
engine: F 6 L 913
tractor DX 120-S 21
84 kW (114 PS)
at 2400 min^{-1}

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,3+0,1	6,9 - 7,0	0,3(0,45)			
325	8,4-8,6	0,9 - 1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.32	325	8,5	1200	11,3-11,4
	x =	4,0							975	11,6-11,9
							325	8,4-8,6	500	11,8-11,9
(5) ca.57	10,3	1240-1250					450-510	=2,0**		
	4,0	1315-1345								
	1425	0,3-1,7								

** Set idle-speed auxiliary spring at 2 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1200	69,5-70,5 (67,5-72,5)	1240-1250*	800	63,5-65,5 (61,0-68,0)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.85

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H6

(1A)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 FOR 4,2 g

3. Edition

En

PES 4 A 90 D 210 RS 2627 RSV 350-1300 AOB 2144 L
AOC 2144 L

Komb.-Nr. 0 400 864 052

supersedes 10.83
company: Ford
engine: Dover 254

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

At port closing the locating pin must engage in the slot of the pointer.
bei RW 9,0 - 12,0 mm

Port closing at prestroke 2,7-2,8 (2,65-2,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	13,5+0,1	7,4 - 7,5	0,3(0,45)			
350	7,2-7,4	0,7 - 1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.35	350	6,9	-	-
	X =	3,5								
							350	7,3-7,5		
ca.69 (5)	12,5	1365-1375					560-620	=2,0		
	4,0	1530-1560								
	1705	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1250	73,5-74,5 (71,5-76,5)	1365-1375*	-	-	100	76,0-90,0 (73,0-93,0) = 19,5 - 21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

8.85

H7

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H7

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,4 d
2. Edición
En

PES 6 A 95 D 410 LS 2644 RQV 250-1100 AB 1178 L
Komb.-Nr. 0 400 846 520

supersedes 9.83
company: MAN
engine: D2566ME

Testöl-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5 - 1,6 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,0+0,1	12,5-12,7	0,35(0,6)			
250	6,9-7,1	0,9-1,5	0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca.12 (3a)	100	min.8,5	200	0,7-0,9
ca.48	11,0	1140-1150					250	6,9-7,1	500	3,7-4,2
	4,0	1175-1205							800	5,3-5,8
	1300	0-1,0							1100	8,1

Torque control travel a = - mm

** Setting of idle stop at 250 min/1 to 7,0 mm control-rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1100	124,5-126,5 (122,5-128,5)	1140-1150*	500	107,5-113,5 (105,0-116,0)	100	121,5-131,5 (118,5-134,5) = 14,0-14,6 mm RW	-	-
			750	113,0-116,0 (110,5-118,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.85

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H8

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 VAU 5,4 a 1

2. Edition

En

PES 6 A 95 D 320 RS 2646
Komb.-Nr. 0 400 846 533

RQV 300-1300 AB 1163-1 R

supersedes 9.84
company: Vauxhall
engine: 330 T/C

Tested ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
810	9,7-9,8	6,4-6,6	0,35(0,6			
300	5,9-6,1	0,8-1,4	0,35(0,5			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1440	15,2-17,8	-	-	-	ca. 17	100	min.7,4	275	0,9-1,1
							300	5,9-6,1	500	3,1-3,5
ca. 61	8,7	1350-1360							1000	5,7-5,8
	4,0	1455-1485				350-490			1300	8,0
	1600	0-1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
810	63,5-65,5 (61,5-67,5)	1350-1360*	1200	71,5-74,5 (69,5-76,5)	100	86,5-96,5 (83,5-99,5) = 19,5-21,0 mm RW	-	-
			500	52,0-55,0 (50,0-57,0)	300	8,0-14,0 (5,5-16,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.85

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Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MB 6,0 a

2. Edición

En

PES 6 A 90 D 410 RS 2667 RQV 300-1400 AB 1065-4 L

Komb.-Nr. 0 400 846 522

Values apply to fuel-injection test tubing
1 680 750 015

supersedes 11.84
company Daimler-Benz
engine OM 366
100 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,25-2,35 (2,20-2,40) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,1+0,1	6,4-6,5	0,3(0,45			
300	8,9-9,1	0,9-1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1500	15,2-17,8	-	-	-	ca. 25	100	min.10,3	250	0,7-0,9
							300	8,9-9,1	630	3,8-3,9
									1020	5,3-5,4
ca. 65	10,1	1440-1450							1400	7,7
	4,0	1545-1575								
	1630	0-1,0				540-680 (3a)				

Torque control travel a = 1,1 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1400	63,5-64,5 (61,5-66,5)	1440-1450*	500	51,0-54,0 (48,5-56,5)	100	78,0-88,0 (75,0-91,0)	1400	11,1+0,1
							500	12,3+0,1
			900	53,5-56,5 (51,0-59,0)		=16,4-17,0 mm RW	900	11,8+0,2
							1100	11,4+0,3

Checking values in brackets

* 1 mm less control rod travel than col 2

6.85

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H10

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 8,0 o

2. Edition .

En

PES 5 A 95 D 410 RS 2680 RQV 300-1150 AB 1088-1 L

Komb.-Nr. 0 400 845 080

supersedes 3.84
company: KHD
engine: F 5 L 413 FRW
85 kW
Tunnelling or mining vehicles

Test oil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5-1,6 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,0-9,1	7,2-7,4	0,35(0,6)			
300	6,4-6,6	1,3-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1190	15,2-17,8	-	-	-	ca. 13	100	min.8,0	300	1,0-1,5
ca.64	8,0	1190-1200					300	6,4-6,6	625	3,2-3,5
	4,0	1240-1270							1195	8,5-8,6
	1400	0-1,0				315-415 (3a)			1350	10,7

Torque control travel a = 1,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	72,0-74,0 (70,0-76,0)	1190-1200*	600	80,5-83,5 (78,0-86,0)	100	115,0-125,0 (112,0-128,0) = 14,0-14,6 mm RW	1150	9,0-9,1
			650	98,5-101,5 (96,0-104,0)			500	10,4+0,1
			**				800	10,0+0,2
							1000	9,2-9,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Adjusted with the full-load stop unblocked. Solenoid switched off.

5.85

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 9,6 m

2. Edición

En

PES 6 A 95 D 410 RS 2681 RQV 300-1150 AB 1088-1 L

Komb.-Nr. 0 400 846 530

supersedes 8.84
company: KHD
engine: F 6 L 413 FRW
102 kW
Tunnelling or mining vehicles

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5-1,6 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,0-9,1	7,2-7,4	0,35(0,6)			
300	6,4-6,6	1,3-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1190	15,2-17,8	-	-	-	ca. 13	100	min.8,0	300	1,0-1,5
							300	6,4-6,6	625	3,2-3,5
ca.64	8,0	1190-1200							1195	8,5-8,6
	4,0	1240-1270							1350	10,7
	1400	0-1,0				315-415 ③a				

Torque control travel a = 1,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
1150	72,0-74,0 (70,0-76,0)	1190-1200*	650	80,5-83,5 (78,0-86,0)	100	115,0-125,0 (112,0-128,0	1150	9,0-9,1
							500	10,4+0,1
							800	10,0+0,2
							1000	9,2-9,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.85

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H12

Test Specifications Fuel Injection Pumps and Governors

WPF 001/4 MB 2,0 L 1

3. Edition

En

Testoil-ISO 4113

PES 4 M 55 C 320 RS 152-1
RSF 375/2250 M 55-1
Komb.-Nr. 0 400 074 960 / Sales model 0 400 074 959
1- 3- 4 - 2
0-90-180-270

supersedes 6.84
company Daimler-Benz
engine OM 601
53 kW
Schweden

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC)

Control rod travel RW 20,0-22,0 mm

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	11,1+0,1	3,1-3,2	0,25(0,3)			
375	5,4-5,6	0,5-0,6	0,10(0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in ☐

Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel: Rotational speed rev/min 8	Control rod travel mm 9
13-17 ①	min.11,5	250	50 ⑦	10,3-10,5	2200	⑫ 100	min. 20,1
②	5,4-5,6	375	⑧	7,8-8,2	2500	⑬ 1800	10,8-11,0
③	4,4-4,6	400 **	⑨	-		⑭ 1000	11,1-11,2
④	-		⑩	0-1,0	2950		
⑤	1,5	630-730	⑪			⑥ Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑲ Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation ⑧a rev/min 3	Variations in fuel delivery ⑰ ⑱ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2200	33,0-35,0 (32,0-36,0)	2500* 7,8-8,2 mm RW	1800	34,0-35,5 (33,0-36,5)	100	min. 55	6,0 ⑫a
					375	5,0-6,0 (4,5-9,0)	1,0 (1,5)
			1000	31,0-32,0 (30,0-33,0)	2500	22,0-26,0 (21,0-27,0)	2,5 ⑮ (3,0) See Point 8 a ⑯

Checking values in brackets

* ca. 2,4 less control rod travel than in Column 2

3.85

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Important:

Test specifications apply to control rod stop screw with collar 6.3 mm dia. and thread M 10 x 1.

For pump versions with control rod stop screw with collar 5.3 mm dia. and thread M 8 x 1, all specified control rod travel values must be increased by 0.5 mm.

1. ** Checking the idle speed auxiliary spring setting at n = 400 rpm, control rod travel (4.3-4.7 mm)

2. Setting the idle control lever position:

   At 1000 rpm, control rod travel 0.9 - 1.0 mm.

3. Checking the idle speed auxiliary spring shut-off

   Control lever position 50°, after change-over point (from starting curve) until 1000 rpm, max. permissible control rod travel 0.2 mm. Control lever position 48.5°; after change-over point (from starting curve) control rod travel must be greater than 0.2 mm.

4. Checking the pneumatic shut-off box

   Control lever on idle stop.
   At n = 375 rpm and pu = 450 mbar (vacuum) (338 mm Hg), the control rod must travel rapidly to control rod position = 0 mm.

5. Overflow valve 1 469 990 351,

6. Port closing difference between largest/smallest value max. 1° camshaft angle.

7. Setting the idle speed control rod travel on the pneumatic idle boost box

   When doing this, release the lock nut.

8. Checking the pneumatic idle boost:

   With 0.4 bar vacuum, n = 425 rpm, control rod travel = (7.0 - 8,6 mm) Delivery = (11.0 - 19.0 cm^3/1000 strokes).

9. Leak test (vacuum test) of pneumatic idle boost box

   Apply 0.8 bar vacuum to the pneumatic idle\boost box via a three-way valve and a pressure gauge. Using the three-way valve, disconnect the vacuum supply from the pneumatic idle boost box and pressure gauge. Permissible pressure drop 30 mbar in 15 sec.

10. Start-of-delivery sensor setting

    Start-of-delivery sensor setting and locking according to average port closing value for all cylinders 19.5 ± 0.2 (0.3)° camshaft angle after cylinder 1.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,0 m

1. Edition

En

Testoil-ISO 4113

PES 4 M 55 C 320 RS 152-3
RSF 375/2300 M 55-5
Komb.-Nr. 0 400 074 934

1- 3- 4 - 2
0-90-180-270

supersedes –
company Daimler-Benz
engine OM 601
53 kW
Schweden

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC)

Control rod travel RW = 20,0-22,0 mm

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	11,1+0,1	3,1-3,2	0,25 (0,3)			
375	5,4-5,6	0,5-0,6	0,1(0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in ☐ Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel 7	Rotational speed rev/min 8	Control rod travel mm 9
13-17	min.11,5	250	50	10,3-10,5	2200		100	min.20,1
	5,4-5,6	375		7,8-8,2	2500		1800	10,8-11,0
	4,4-4,6	400**		-			2200	10,3-10,5
	-			0 - 1,0	2950			
	1,5	630-730						
						Switching point		

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a): rev/min 3	Variations in fuel delivery (17)(18): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2200	33,0-35,0 (32,0-36,0)	2500 * RW = 7,8-8,2	1800	34,0-35,5 (33,0-36,5)	100	min. 55	6,0 (12a)
					375	5,0-6,0 (4,5-9,0)	1,0 (1,5)
			1000	31,0-32,0 (30,0-33,0)	2500	22,0-26,0 (21,0-27,0)	2,5 See (15) (3,0) Point 8 a (16)

Checking values in brackets * ca. 2,4 less control rod travel than in Column 2

3.85

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H15

1. ** Checking the idle speed auxiliary spring setting at n = 400 rpm, control rod travel (4.3-4.7 mm)

2. Setting the idle control lever position:

   At 1000 rpm, control rod travel 0.9 - 1.0 mm.

3. Checking the idle speed auxiliary spring shut-off

   Control lever position 50°, after change-over point (from starting curve) until 1000 rpm, max. permissible control rod travel 0.2 mm. Control lever position 48.5°; after change-over point (from starting curve) control rod travel must be greater than 0.2 mm.

4. Checking the pneumatic shut-off box

   Control lever on idle stop.
   At n = 375 rpm and pu = 450 mbar (vacuum) (338 mm Hg), the control rod must travel rapidly to control rod position = 0 mm.

5. Overflow valve 1 469 990 351,

6. Port closing difference between largest/smallest value max. 1° camshaft angle.

7. Setting the idle speed control rod travel on the pneumatic idle boost box

   When doing this, release the lock nut.

8. Checking the pneumatic idle boost:

   With 0.4 bar vacuum, n = 425 rpm, control rod travel = (7.0 - 8,6 mm) Delivery = (11.0 - 19.0 cm^3/1000 strokes).

9. Leak test (vacuum test) of pneumatic idle boost box

   Apply 0.8 bar vacuum to the pneumatic idle boost box via a three-way valve and a pressure gauge. Using the three-way valve, disconnect the vacuum supply from the pneumatic idle boost box and pressure gauge. Permissible pressure drop 30 mbar in 15 sec.

10. Start-of-delivery sensor setting

    Start-of-delivery sensor setting and locking according to average port closing value for all cylinders 19.5 ± 0.2 (0.3)° camshaft angle after cylinder 1.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 5,5 h
2. Edition
En

Test-No. 4112

PES 6 MW 80/720 RS 1015 RQV 300-1600 MW 47
0 403 446 142

1- 5- 3 - 6 - 2 - 4
0-60-120-180-240-300

supersedes 12.83
company: Iveco-Fiat
engine: 8060.24.670
121 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 (2,05-2,25) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,7+0,1	6,0-6,2	0,35(0,6)			
300	9,2-9,3	1,05-1,45	0,35(0,55)			
1600	12,7+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1640 1850	15,2-17,8 0-1,0				ca. 22	100 300	min. 10,8 9,2-9,3		
ca. 65	11,7 4,0	1640-1650 1785-1815				330-800 (3a)				

Torque control travel a = mm

Test electrically unlocked starting delivery with 24 V.

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	60,0-62,0 (58,5-63,5)	1640-1650*	1600	69,0-73,0 (67,0-75,0)	100 300	19-21 mm RW 120,0-130,0 (117,0-133,0) 10,5-14,5 (8,0-17,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.85

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H17

Testoil-ISO 4113

PES 8 MW 100/720 RS 1019 RQV 375-1200 MW 38
0 403 448 109

supersedes –
company: Perkins
engine: AIV 8.640
177 kW (241 PS)

1- 8- 7- 5 - 4 - 3 - 6 - 2
0-45-90-135-180-225-270-315 + 0,5 (0,75)
+ Port-closing mark, see reverse

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,9+0,1	9,9 - 10,1	0,35(0,6)			
375	6,8-7,0	1,15- 1,55	0,35(0,55)			
700	11,9+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 14	375	6,8-7,0		
	1400	0,1- 1,0					100	min.8,5		
ca.64	11,0	1240-1250					630-690	= 2,0		
	4,0	1340-1370								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1200	99,0-101,0	1240-1250 *	700	97,0-101,0	100	RW 19-21		
	(95,0-101,0)			(95,0-103,0)		min. 140,0		
						100-280 (80-290)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.85

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H18

Port closing and TDC markings

Comb. - No.	° camshaft between port-closing and TDC at control-rod travel 9 - 12 mm
... 109	15°

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 PER 10,0 g
2. Edition
En

Testoil-ISO 4113

PES 8 MW 100/720 RS 1019
0 403 448 111

RQV 375-1200 MW 38-1

supersedes -
company: Perkins
engine: MTV8.640
194 kW (264 PS)

1- 8- 7- 5 - 4 - 3 - 6 - 2
0-45-90-135-180-225-270-315 + 0,50 (0,75)
+ Port-closing mark, see reverse

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) 9-12,0 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,6+0,1	10,1 - 10,3	0,35(0,6)			
375	6,8-7,0	1,15 - 1,55	0,35(0,55)			
700	11,6+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca.16 (3a)	375	6,8-7,0		
	1400	0,1- 1,0					100	min.8,5		
ca.64	10,6	1240-1250					560-620= 2,0			
	4,0	1315-1345								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1200	101,0-103,0 (99,0-105,0)	1240-1250*	700	93,0-97,0 (91,0-99,0)	100	min. 140,0		
					100-280 (80-290)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.85

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H20

H20

Port closing and TDC markings

Comb. - No.	° camshaft between port-closing and TDC at control-rod travel 9,0 - 12,0 mm
... 111	15°

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 PER 10,0 1
2. Edition
En

Testoil-ISO 4113

PES 8 MW 100/720 RS 1020 RQV 375-1200 MW 38
0 403 448 112

1- 8- 7- 5 - 4 - 3 - 6 - 2
0-45-90-135-180-225-270-315
+ Port-closing mark, see reverse

supersedes -
company: Perkins
engine. AIV 8.640
153 kW (208 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,0+0,1	8,2 - 8,4	0,35(0,6)			
375	5,6-5,8	1,35 - 1,75	0,35(0,55)			
800	10,0+0,1	7,85 - 8,25	0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca.16	375	5,6-5,8		
	1400	0,1-1,0					100	min.7,3		
ca.64	9,0	1240-1250					540-600	= 2,0		
	4,0	1305-1385				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1200	82,0-84,0 (80,0-86,0)	1240-1250*	800	78,5-82,5 (76,5-84,5)	100	min. 140,0 (137,0)		
						100-280 (80-290)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.85

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H22

Port closing and TDC markings

Comb. - No.	° camshaft between port-closing and TDC at control-rod travel 9,0 - 12,0 mm
... 112	15°

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 11,8 m
2. Edition
En

PE6P100A720RS15 RSV350-750P1/365R
Komb.-Nr. 0 401 876 142 P1A365R

supersedes 10.82
company: Daimler-Benz
engine: OM 355

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW= 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
730	12,7 +0,1	10,6-10,8	0,3(0,6)			
350	7,1-7,3	1,4- 2,0	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	750	0,3-1,0	-	-	-	ca.17	350	7,2	-	-
	x =	3,25					100	min.19,5		
							350	7,1-7,3		
(5) ca. 33	11,7	750-760					355-415	= 2,0 **		
	4,6	780-795								
	850	0,3-1,7								

** Set idle-speed auxiliary spring at 1,5-2,0 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
730	106,0-108,0 (104,0-110,0)	750-760 *	-	-	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.85

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H24

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 PER 10,0 i
2. Edition
En

Testoil-ISO 4113

PES 8 MW 100/720 RS 1021 RQV 250-1300 MW 30
0 403 448 108

1- 8- 7- 5 - 4 - 3 - 6 - 2
0-45-90-135-180-225-270-315 + 0,50 (0,75)
+ Port-closing mark, see reverse

supersedes –
company: Perkins
engine: V8.640 V
160 kW (218 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	10,7-0,1	9,0 - 9,2	0,35(0,6)			
250	6,4-6,6	1,35 - 1,75	0,35(0,55)			
800	10,7+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1300	15,2-17,8	-	-	-	ca.14	250	6,4-6,6		
	1500	0-1,0					100	min.8,1		
ca. 64	9,7	1340-1350					490-550 = 2,0			
	4,0	1425-1455				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1300	90,0-92,0 (88,0-94,0)	1340-1350*	800	89,5-93,5 (87,5-95,5)	100	min. 140		
					100-180 (80-200)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.85

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Port closing and TDC markings

Comb. - No.	° camshaft between port-closing and TDC at control-rod travel 9,0 - 12,0 mm
... 108	15°

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 PER 10,0 n
2. Edition
En

Testoil-ISO 4113

PES 8 MW 100/720 RS 1106 RQV 250-1300 MW 30-1
0 403 448 117

1- 8- 7- 5 - 4 - 3 - 6 - 2
0-45-90-135-180-225-270-315
+ Port-closing mark, see reverse

supersedes 9.82
company Perkins
engine: V 8.640 V
160 kW (218 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	10,7-0,1	9,0 - 9,2	0,35(0,6)			
250	6,4-6,6	1,35-1,75	0,35(0,55)			
800	10,7+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1300	15,2-17,8	-	-	-	ca. 14	250	6,4-6,6		
	1550	0 - 1,0					100	min.8,1		
ca.64	9,7	1365-1375					490-550= 2,0			
	4,0	1450-1480				③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
1300	90,0-92,0 (88,0-94,0)	1340-1350*	800	89,5-93,5 (87,5-95,5)	100	110,0-120,0		
					100-180 (80-200)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.85

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J3

J3

Port closing and TDC markings

Comb. - No.	° camshaft between port-closing and TDC at control-rod travel 9,0 - 12,0 mm
... 117	15°

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 a 1
2. Edition

En

PE 6 P 110 A 320 RS 141 RQV 250-1100 PA 371/2 R
Komb.-Nr. 0 401 846 377

supersedes 7.83
company: Volvo
engine: TD 120 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6-2,7 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,3+0,1	18,1-18,3	0,4(0,8)			2,5 ± 0,1
250	5,0-5,2	1,1-1,5	0,3(0,6)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.13	100	min.6,5	200	0,7-0,9
ca.46	10,3	1140-1150					250	5,0-5,2	500	3,0-3,3
	4,0	1220-1250					320-380	= 2,0	800	5,1-5,4
	1300	0-1,0							1000	7,9

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 181,0-183,0 (178,0-185,0)	1140-1150*	LDA 700	0 bar 125,0-129,0 (123,0-131,0)	100	350,0-390,0 = 20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.85

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J5

J5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE6P..RS141 + RQV..PA371-2R	0,90	0	11,3-11,4
		0,50	8,8-8,9
		0,22	10,7-10,8
			9,3-9,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 11,8 b 1
3. Edition
En

PE 6 P 110/720 RS 176 RSV 300-1100 P 1/303 R
A .. P 1A303 R
Komb.-Nr. 0 401 876 110

supersedes 5.84
company Daimler-Benz
engine OM 355
Schmitt
snow plough

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8.2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,7+0,1	13,5-13,7	0,4 (0,8)			
300	7,5-7,7	1,2- 1,8	0,4 (0,7)			

Testoil-ISO 4113

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
max.	800	0,3-0,7	-	-	-	ca.21	300	7,1		
	x = 4,75						300	7,5-7,7		
ca.56	11,7	1140-1150					495-555	= 2,0		
(2a)	4,0	1235-1255								
	1260	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	135,0-137,0 (132,0-140,0)	1140-1150*	-	-	100	170,0-190,0 (166,0-194,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.85

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J7

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 11,6 l
En 6. Edition

PE 6 P 120 A 320 RS 372 RSV 250-1100 P5/458R
Komb.-Nr. 0 401 876 229
Note VDT-I-420/114!

supersedes 5.84
company DAF
engine DKS 1160
235 kW (320 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	10,9+0,1	19,3 - 19,7	0,5 (0,9			
250	6,2-6,4	1,1 - 1,5	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca. 24	250	5,8	400	11,1+0,
	x =	5,0							300	11,3+0,
							250	6,2-6,4		
(5) ca. 54	9,9	1140-1150					620-580 = 2,0			
	4,0	1260-1290								
	1425	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 193,0-197,0 (190,0-200,0)	1140-1150*	LDA 600	0 bar 135,5-137,5 (132,5-140,5)	100	320,0-360,0 (316,0-364,0) = 19,5 - 21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

8.85

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J8

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE6P120..RS 372 with..P5/458R	0,36		10,6-10,7
		0,70	10,9-11,0
		0	9,8-9,9
		0,28	10,0-10,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11.1 q 1
6. Edition

En

PES 6 P 110 A 720 LS 375 RQV 250-1100 PA 373 DR
Komb.-Nr. 0 402 046 180

superseded 11.84
company: MAN
engine D 2566 MTF
206 kW (280 PS)
2200min⁻¹
MAN-Nr. 1-7983

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95-3,15) mm (from BDC) Zyl. 6; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,4+0,1	14,6-14,9	0,4(0,75)			
250	7,3-7,5	1,0-1,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 13	100	min.8,9	325	1,7-2,2
							250	7,3-7,5	900	6,2-6,4
ca.65	11,4	1140-1150					520-	580=2,0	1100	8,0-8,2
	4,0	1225-1255								
						390-510				
						(3a)				

Torque control travel a = 0,9 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1140-1150*	LDA	0,2 bar	100	225,0-245,0	1100	12,4+0,1
1100	146,0-149,0		500	123,0-127,0		(221,0-249,0)	700	13,3+0,1
	(143,5-151,5)			(120,0-130,0)			900	13,0+0,2
LDA	0,7 bar		LDA	0 bar	250	10,0-15,0	1000	12,5+0,3
700	157,0-161,0		500	110,0-113,0		(7,5-17,5)		
	(154,0-164,0)			(107,5-115,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.85

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J10

J10

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P..LS 375 + RQV..PA 373 DR	0,70	0 0,20 0,32	13,3-13,4 11,3-11,4 11,8-11,9 12,6-12,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

J11

J11
Fn

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 CAT 7,0 b
2. Edition

En

PES 4 P 80 A 720 LS 852
Komb.-Nr. 9 400 087 301

RQV 350-1000 PA 609-1

supersedes 12.84
company: Caterpillar
engine: 3304 T
107 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test oil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,65-1,75 (1,60-1,80) mm (from BDC); RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,2+0,1	10,7-10,8	0,25 (0,35)			
350	6,7-6,9	1,0-1,7	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1010	15,2-17,8	-	-	-	ca. 17 (3a)	100	min.11,5		
ca. 68	11,2	1030-1040					350	6,3-6,6		
	4,0	1110-1140					530-590	= 2,0		
	1200	0-1,0								

Torque control travel a = 1,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	106,5-107,5 (105,0-109,0)	1030-1040*	700	113,0-115,0 (111,0-117,0)	100	17,6-18,6 mm RW	1000	12,2+0,1
							850	12,7+0,2
			500	109,0-112,0 (107,0-113,0)			700	13,1+0,2
							500	13,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

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J12

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DEE 7,6 g
2. Edition

En

US-PES 6 P 110 A 720 RS 3083 US-RSV 400-1050 P2/488-1

supersedes 8.01

company John Deere
engine 6466 A
168 kW

Komb.-Nr. 9 400 231 175

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,45-3,55 (3,40-3,60) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1050	12,4+0,1	14,7-15,0	0,4(0,75)			
400	6,6-6,8	1,4-2,0	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.23	400	6,2	1050	12,4-12,5
	X=						100	min.19,0	700	13,6-13,9
							400	6,6-6,8		
ca.45 (2a)	11,4	1095-1105					600-660	=2,0		
	4,0	1175-1205								
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	1,2 bar	1095-1105*	LDA	1,2 bar	100	156,0-176,0	400	6,7
1050	146,5-149,5		700	179,0-183,0		(152,0-180,0)		
**	(144,0-152,0)			(176,0-186,0)				
			LDA	0 bar				
			500	91,0-95,0				
				(88,0-98,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

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J13

J43

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
US-PES6P..RS3083 +US-RSV..P2/488-1	0		10,4-10,5
		0,66	12,9-13,0
		0,40	11,0-11,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

** Setting without a compensating spring retainer at 1 mm control-rod travel less. Boosting of the full load fuel delivery with the compensating spring retainer to 11.5 mm control-rod travel.

En JAY

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4DAO 31,8 a 2

2. Edition

En

40

PE 12 P 130 A 120 RS 3094   RQV 350-900 PA 618
Komb.-Nr. 0 401 830 703
1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6
0-45-60-105-120-165-180-225-240-285-300-345 ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 074.

supersedes 5.85
company: Baudouin
engine: V 12 P 15 SRCN

Testöl ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)   RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,2+0,1	30,9 - 31,2	0,6(1,0)			
350	4,8-5,0	2,0 - 2,6	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min / Control rod travel mm 2	Control rod travel mm / rev/min 3 (1a) (2a)	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6 (4)	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9 (3)	Sliding sleeve travel (1): rev/min 10	mm 11
max.	940	15,2-17,8	-	-	-	ca.30	350	4,8-5,0	325	1,2-1,6
ca. 62	11,2	940-950							500	3,1-3,8
	4,0	1005-1035							750	6,0-6,4
	1150	0 - 1,0				350-450 (3a)			900	7,9

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
900	309,0-312,0 (305,0-315,0)	940-950 *	-	-	350	20,0-26,0 (16,0-30,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.85

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J15

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BAO 31,8 a
2. Edition
En

PE 12 P 130 A 120 RS 3094-1 RQV 400-750 PA 632
1 - 12- 9 - 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6
0-45-60-105-120-165-180-225-240-285-300-345°±0,5°(±0,75°)

supersedes 9.83
company. Baudouin
engine. V 12 P 15 SRCN

Values only apply to test nozzle-and-holder assembly Komb.-Nr. 0 401 830 704
1 688 901 019 and fuel-injection test tubing 1 680 750 074.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 - 3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,4+0,1	30,6-31,0	0,5(0,9)			
400	3,5-3,7	2,1-2,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ①: rev/min 10	mm 11
ca. 24	10,4 4,0 900	750-755 780-790 0 -1,0	-	-	-	ca. 6 ③a	100 400 690-750= 2,0	min.5,1 3,5-3,7	375 450-650 750	0,5-0,7 ?,0-?,1 4,3

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed ②b limitation intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
700	306,0-310,0 (303,0-313,0)	750-755*	-	-	- 400	- 21,0-27,0 (18,0-30,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 11,4 o
4. Edition
En

Testoil-ISO 4113

PES 6 P 120 A 820 LS 3095 RSV 350-750 P1/487

supersedes 8.83
company: Daimler-Benz
engine: OM 407 A
169 kW (230 PS)
Komb.-Nr. 0 402 076 717

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) cyl.6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
730	12,4+0,1	19,6 - 19,8	0,5(0,8)			
350	5,7-5,9	3,0 - 4,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	700	0,3-1,0	-	-	-	-	-	-	-	-
	x =	2,25								
ca. 33 (5)	11,4	750-755								
	4,0	776-789								
	900	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
730	196,0-198,0 (193,0-201,0)	745-760 *	-	-	100	170,0-190,0 (166,0-194,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

05.85

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 11,0 y
3. Edition

En

PE 6 P 110 A 720 RS 3115 RQV 200-1100 PA 468

supersedes 8.84
company. Saab-Scania
engine: DN 11 01

Komb.-Nr. 0 401 846 764
See page 2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (3,25-3,45) mm (from BDC) RW= 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,4+0,1	11,9-12,1	0,5(0,8)			3,3±0,1 (3,0-3,5)
225	5,4-5,6	2,0-2,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever ⑦a 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca. 11	100	min.6,9	150	0 -0,3
							225	5,4-5,6	470	3,6-4,2
ca. 61	11,4	1140-1150					330-390=2,0		780	5,6-5,8
	4,0	1250-1280							1100	8,3
	1400	0 - 1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
600	119,0-121,0 (117,0-123,0)	1140-1150 *	1100	119,5-124,5 (117,0-127,0)	100	230,0-290,0 = 20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 22.8.1983
- Start of fuel delivery-engine: 21° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 k

3. Edition

En

PE 6 P 120 A 320 RS 3118 RQV 250-1025 PA 657
Komb.-Nr. 0 401 846 772
Values apply to
Calibrating nozzle-and-holder assembly 1 688 901 019
Test-pressure line 1 680 750 067

supersedes 1.85
company: Volvo
engine: TD 121 F
282 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 - 2,7 (2,55-2,75) mm (from BDC). RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,3+0,1	23,8-24,1	0,5(0,9)			2,5 ± 0,1
250	3,3-3,5	1,8-2,3	0,5(0,7)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1090	15,2-17,8	-	-	-	ca. 10	100	min.4,8	200	0,7-0,9
ca. 65	12,3	1085-1095					250	3,3-3,5	430	3,5-3,9
	4,0	1150-1180							660	
	1250	0-1,0						285-345=2,0	-	6,4-6,6
									945	7,6
									1025	

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	1,2 bar	1065-1075*	LDA	0 bar	100	240,0-280,0	-	-
700	238,0-241,0		700	138,0-142,0		= 20,0-21,0		
	(235,0-244,0)			(135,0-145,0)		mm RW		
					250	18,0-23,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.85

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J20

J20

D. Adjustment Test for Manifold Pressure Compensator

Test at n 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel diminution difference	
	Gauge pressure = bar	Gauge pressure = bar	mm	(1)
PE 6 P..RS 3118 + RQV..PA 657	1,20		13,3 - 13,4	
		0	8,8 - 9,0	
		0,80	13,1 - 13,2	
		0,17	9,2 - 9,5	

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

① Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 K 1

3.Edition

En

PE 6 P 120 A 320 RS 3118 RQV 250-1100 PA 657-1
Komb.-Nr. 0 401 846 782

supersedes 5.85
company: Volvo
engine: TD 121 FD
282 kW

Calibrating nozzle-and-holder assembly 0 681 443 019
Test-pressure line 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6-2,7 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,3+0,1	23,8-24,1	0,5 (0,9)			2,5±0,1
250	3,3-3,5	1,9-2,3	0,5 (0,7)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1180	15,2-17,8	-	-	-	ca. 9	100	min. 5,0	200	0,7-0,9
ca. 61	12,0	1160-1170					250	3,3-3,5	430	3,4-3,9
	4,0	1240-1270					290-340	= 2,0	660	
	1350	0 - 1,0							-	6,4-6,6
									1040	
						③a			1100	7,3

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA	1,2 bar	1140-1150 *	LDA	0 bar	100	240,0-290,0	-	-
700	238,0-241,0		700	138,0-142,0		= 20,0-21,0		
	(235,0-244,0)			(135,0-145,0)		mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.85

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J22

J22

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PE6P.. RS 3118 + RQV.. PA 657-1	1,20		13,3-13,4
		0	8,8-9,0
		0,80	13,1-13,2
		0,17	9,2-9,5

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors ①

WPP 001/4 BAO 31,8 b
2. Edition

40

En

PE 12 P 130 A 120 RS 3127 RQV 350-900 PA 618
1-12-9-4-5-8-11-2-3-10-7-6
0-45-60-105-120-165-180-225-240-285-300-345° ± 0.5° (±0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 074.

supersedes 11.84
company: Baudouin
engine: 12 P 15-2 AN-SR
Kom.-Nr. 0 401 830 708

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,2+0,1	30.9-31,2	0,6 (1,0)			
350	4.8-5.0	2.0-2.6	1.6 (1,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	940	15.2-17.8	-	-	-	ca. 30	100	min.6,4	325	1,1-1,3
							350	4,8-5,0	500	3,1-3,8
ca. 62	11,2	940-950							750	6,0-6,4
	4.0	1005-1035				350-450			900	8,0
	1150	0 - 1.0								
						③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
900	309.0-312.0 (304.0-316.0	940-950 *	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

8.85

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J24

Test Specifications Fuel Injection Pumps and Governors (1)

WPP 001/4 MB 14,6 m
3. Edition

En

PE 8 P 110 A 320 LS 3813 RQV 350-1150 PA 378
Komb.-Nr. 0 401 848 740
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (± 0,75°)
Note VDT-I-401/102

supersedes 9.83
company: Daimler-Benz
engine: OM 422
206 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) cyl.8; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery ** cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 8
1130	12,6+0,1	12,3-12,5	0,4(0,8)	11,5+0,1	13,1-13,3	n=1150 min⁻¹
350	8,2-8,3	1,2-1,7	0,4(0,7)	7,4-7,6	1,4-1,8	
			0,6(0,9)	600 1150	C, Sp.4 u.5	

* with return throttle (1)

** without return throttle (2)

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel (1a) mm rev/min (2a) 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	rev/min 10	mm 11
max.	1130	15,2-17,8	-	-	-	ca. 14	100	min.8,7	300	0,6-0,9
ca. 62	11,6	1180-1190					350	7,0-7,2	580	3,6-3,8
	4,0	1280-1305							870	5,2-5,3
	1400	0 - 1,0				375-485			1150	7,6
						(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min 1	cm³/1000 strokes 2	rev/min (4a) 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
(1)		1180-1190*	-	-	100	130,0-150,0	-	-
1130	123,0-125,0 (120,0-128,0)							

Checking values in brackets

* 1 mm less control rod travel then col. 2

3.85

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K1

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rodtravel mm	Control rod travel mm rev/min	(1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm	(4)	Degree of deflection of control lever	rev/min	Control rod travel mm	(3)	(1) rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
max.	1170	15,2-17,8		-	-	-		ca. 14	100	min.8,7		300	0,6-0,9
ca. 62	10,5	1190-1200							350	7,0-7,2		580	3,6-3,8
	4,0	1295-1325										870	5,2-5,3
	1400	0 - 1,0						375-485				1150	7,6
								(3a)					

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2) 1150	131,0-133,0 (128,5-135,5)	1180-1190*	600	109,0-113,0 (106,0-116,0)	100	140,0-160,0 (136,0-164,0)	-	-
			1150	84,0-87,0 (81,0-90,0) **				

Checking values in brackets

* 1 mm less control rod travel than col 2

** Reduced delivery

Testoil-ISO 4113

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	(1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm	(4)	Degree of deflection of control lever	rev/min	Control rod travel mm	(3)	(1) rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
								(3a)					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min		rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

K2

En

Test Specifications Fuel Injection Pumps ① and Governors

PE 12 P 130 A 120 RS 3127 RQV 400-750 PA 632
Komb.-Nr. 0 401 830 707
1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6
0-45-60-105-120-165-180-225-240-285-300-345 ± 5 ° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 074.

supersedes 5.85
company: Boudouin
engine: 12 P 15

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,0+0,1	30,7-31,0	0,6(1,0)			
400	4,4-4,6	2,1-2,7	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
ca. 25	11,0 4,0 900	750-755 776-789 0-1,0	-	-	-	ca. 6 (3a)	100 400	min.6,0 4,4-4,6	-	-

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
700	307,0-310,0 (303,5-313,5)	750-755*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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K3

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 11,0 m
4. Edition

En

PE 6 P 110 A 320 LS 3814 RQV 350-1150 PA 378
Komb.-Nr. 0 401 846 741

supersedes 9.83
company: Daimler-Benz
engine: OM 421

1- 6- 3 - 5 - 2 - 4
0-75-120-195-240-315° ± 0,5° (± 0,75°)

Note VDT-I-401/102

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test:ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery mit RSD (1) cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery ohne RSD (2) cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	12,7+0,1	12,3-12,5	0,4(0,8)	12,7+0,1	13,4-13,6	
350	8,2-8,4	1,3-1,9	0,4(0,7)	8,2-8,4	1,3-1,9	

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 16	100	min. 8,5	300	0,6-0,9
							350	8,2 - 8,4	580	3,6-3,7
ca.66	11,7	1180-1190							870	5,2-5,3
	4,0	1285-1315				375-485			1150	7,6
	1400	0-1,0								
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
(1) 1130	123,0-125,0 (120,0-128,0)	1170-1180*	-	-	100	130,0-150,0	-	-

Checking values in brackets.

* 1 mm less control rod travel than col. 2

3.85

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K4

K4

B. Governor Settings

Upper rated speed				intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
max.	1150	15,2-17,8		-	-	-	ca. 16	100	min.8,5	300	0,6-0,9
								350	8,2-8,4	580	3,6-3,7
ca. 66	11,7	1180-1190								870	5,2-5,3
	4,0	1285-1315								1150	7,6
	1400	0-1,0					375-485				
							(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2) 1150	134,0-136,0 (131,5-138,5)	1170-1180*	1150	93,0-97,0 (90,0-100,0) **	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

** Reduced delivery

Testoil-ISO 4113

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
							(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min		rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

K5

En

K5

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 14,6 p 1

2. Edition

En

PE 8 P 120 A 320 LS 3816-10 RSV 650-1150 POA 823

supersedes 1.85

company Daimler-Benz

engine OM 422 A
206 kW
Komb.-Nr. 0 401 878 70.

1-8-7-2-6-3-5-4 je 45° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-oil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1180	9,3-9,4	13,7-13,9	0,5 (0,9)			
650	3,4-3,6	1,6-2,2	0,8 (1,2)			
975	-	C, Sp. 4 u. 5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	650	3,6	1180	9,3-9,4
	x = 2,25						650	3,5-3,7	975	10,1-10,2
ca. 46 (2a)	8,3	1210-1220					655-695	= 2,0	1075	9,6-9,8
	4,0	1235-1250								
	1400	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm * 9
1180	137,0-139,0 (134,0-142,0)	1160-1170*	975	152,0-158,0 (149,0-161,0)	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

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K6

K6

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 SCA 11,0 u
6. Edition
En

PE 6 P 120 A 720 RS 7001 RQV 200-1000 PA 539

supersedes 11.84
company: Scania
engine: DS 11 15
Komb.-Nr. 0 402 646 801

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

TestoilISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

to FD 052: 4,40-4,50 (4,35-4,55)

from FD 141: 5,0-5,1 (4,95-5,15)

Port closing at prestroke mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,2+0,1	19,9-20, 1	0,6 (0,9)			3,3 ± 0,1 **
225	4,6-4,8	1,3-1, 7	0,3(0,6)			(3,0 - 3,5)

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1000	15,2-17,8	-	-	-	ca. 10	100	min. 5,9	150	0,5-0,8
ca. 60	12,2	1040-1050					225	4,4-4,6	430	3,0-3,5
	4,0	1150-1180					310-370	=2,0	720	5,0-5,2
	1300	0 - 1,0				(3a)			1000	7,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,9 bar	1040-1050*	LDA	0,9 bar	100	240,0-290,0	-	-
700	199,0-201,0 (196,0-204,0)		1000	193,0-201,0 (191 ,0-203,0)		bei 20,0 - 21,0 mm RW		
			LDA 500	0 bar 160,0-164,0 (158,0-166,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.85

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K7

K7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 7001	0,42		12,8 - 12,9
+ ..PA 539		0,90	13,2 - 13,3
		0	11,6 - 11,7
		0,29	11,9 - 12,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- for combination with letter index see VDI-I-400/116
- for sealing, see VDI-I-400/117
- Test specifications approved by Scania 18.8.1983
- Start of fuel delivery-engine: 17° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 3,0 - 3,1 mm.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 SCA 14,2 a 3
5. Edition
En

PE 8 P 120 A 920/4 LS 7002 RQV 250-1000 PA 547
1-2-7-3-4-5-6-8 je 45° ± 0,5° (± 0,75°)

superseded 10.84
company Scania
engine DS 14 06
Komb.-Nr. 0 402 648 801

Values only applx to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke: from FD 141: 5,0 - 5,1 (4,95 - 5,15) to FD 052: 4,4 - 4,5 (4,35 - 4,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,2+0,1	18,7-18,9	0,6(0,9)			3,3 ± 0,1
225	4,9-5,1	1,0- 1,4	0,3(0,6)			(3,0 - 3,5)

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1000	15,2-17,8	-	-	-	ca.10	100	min.5,9	200	1.0-1,2
ca. 60	12,2	1040-1050					225	4,4-4,6	470	3,3-3,8
	4,0	1150-1180					310-370=2,0		730	5,1-5,3
	1250	0 - 1,0				(3a)			1000	7,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,9 bar	1040-1050*	LDA	0,9 bar	100	240,0-290,0	-	-
700	187,0-189,0 (184,0-192,0)		1000	183,0-191,0 (181,0-193,0)		bei 20,0-21,0 mm RW		
			LDA 500	0 bar 137,0-141,0 (135,0-143,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.85

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K9

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel mm (1)
..LS 7002 RQV..PA 547	0,9 bar	0 bar 0,23 bar 0,35 bar	13,2 - 13,3 11,3 - 11,4 11,9 - 12,1 12,8 - 12,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full load control rod travel)

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 19.8.1983
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-4-2-6-3-7-8

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 3,0 ± 0,1 mm.

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 SCA 11,0 y 1
3.. Edition
En

supersedes 8.84
company Saab-Scania
engine DN 1101

PE 6 P 110 A 720 RS 3115 RSV 350-1100 P 1/481

Komb.-Nr. 0 401 876 728
See page 2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-ID 4123

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,4+0,1	11,9-12,1	0,5(0,7)			3,3±0,1 (3,0-3,5)
350	5,4-5,6	2,0-2,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 30	350	5,0	-	-
	X = 5,75									
ca. 66	11,4	1140-1150					350	5,4-5,6		
	4,0	1210-1240					480-540	0 = 2,0		
(2a)	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
600	119,0-121,0 (117,0-123,0)	1140-1150*	1100	119,5-124,5 (117,0-127,0)	100	240,0-290,0 = 20,0-21,0 mm RW	0 -	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.85

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K11

KAA

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 22.8.1983
- Start of fuel delivery-engine: 21° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 MWM 3,1 c
2. Edition
En

PES 3 A 80 D 320/3 RS 1331 RSV 325-1500 A 2 B 505 DR

Komb.-Nr. 0 400 463 137

1 - 2 - 3 je 120° ± 0,5° (± 0,75°)

supersedes 4.84
company MWM
engine D 226-3, 916-3

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1480	9,0-9,1	4,8 - 4,9	0,25(0,4)			
325	7,4-7,6	1,0 - 1,6	0,2 (0,35)			

Port closing difference between control-rod travel 9 mm and max. 3,5 - 4,5° camshaft

Adjust the fuel delivery from each outlet according to the values in ☐

Tesdi-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	- - -	ca.19	325	5,5	-	-
	X = 3,5				100	min.19,0		
ca.57 (2a)	8,0	1530-1540			325	5,9-6,1		
	4,0	1570-1600			410-470=2,0mm			
	1740	0,3 - 1,7						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	(5) cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1480	48,0 - 49,0 (46,5 - 50,5)	1530-1540*	-	-	100	90,0-106,0 (87,0-109,0) bei RW=19,5 - 21,0 mm	-	-
					325	9,5-15,5 (8,0-17,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

5.85

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K13

K13

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MWM 19,9 b
4. Edition
En

Testoil-ISO 4113

(1) PE6P 120 A 320 RS 353 RSUV 300-750 P 9 A 333/1 R
(2) PE6P 120 A 300/3 RS 342
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 074.

supersedes 10.83
company: MWM - Südbremse
engine: D/TD/TBD 601-6
601-6 S
Komb.-Nr. 0 401 876 215 (1)
0 401 816 053 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,3-2,4 (2,25-2,45) mm (from BDC) RW=19,5-22,5 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,0+0,1	26,0-26,4 (25,7-26,7)	0,5 (0,9)			
300	5,5-5,7	2,6 - 3,2	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings (1)

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.29	300	5,1	700	13,0-13,1
	x =	5,25					100		450	13,0-13,1
ca.70 (5)	12,0=7	90-800					300	5,5-5,7	325	14,2-14,8
	4,0=8	15-845					2,0=	315-375		
	980 =0	,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor (1)

without (2) and

(2) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery Idle		(5a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note: changed to ... rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	7 mm RW	rev/min 8	Control rod travel mm 9
			-	-	100	19,5-21,0	-	-
The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet.								

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.85

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K14

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 11,8 g

3. Edition

Testoil-ISO 4113

En

PE 6 P 100 A 720 RS 15 RSV 350-1000 P 4A466 R (1) P 4/466 R

RS 15 Z RSV 350 -750 P 1/365 R (2)

supersedes 11.79

company Daimler-Benz

engine OM 355

(1 - 152 kW - 207 PS)

(2 - 97 kW - 132 PS)

** Set idle-speed auxiliary spring at 1,5-2,0 mm control-rod travel.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes (1) 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes (2) 3	Spring pre-tensioning (torque-control valve) mm 6
980	13,7-13,8	11,7 - 12,0	0,3(0,6)	12,0-12,1	9,6 - 9,8	n = 730
350	7,7-7,9	1,3 - 1,9	0,3(0,5)	7,7-7,9	1,2 - 1,8	n = 350

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

466R (1)

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3 - 1,0 X = 2,5			ca. 22	350	5,3	980	13,7-13,8
					100	min. 20		
ca. 58 (2a)	1020-1030 = 12,7 1065-1095 = 4,0 1200 = 0,3-1,				350 510-570	5,7-5,9 = 2,0	500	13,7-13,9

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
980	117,0 - 120,0 (114,0 - 123,0)	1020-1030*	-	-	-	-	-	-
					1100-1120=4mmRW			
					Adjusting the idle-speed auxiliary spring			
								./.

Checking values in brackets

* 1 mm less control rod travel than col 2

7.85

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K15

K15

The numbers denote the sequence of the tests

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	(4) Lower rated speed: Control-lever deflection in degrees (7)	rev/min (8)	Control rod travel mm (9)	(3) Torque control: rev/min (10)	Control rod travel mm (11)
loose	800 0,3 - 1,0			ca. 17	350	6,7**	730	2,0-12,1
	X =				100	min. 20	500	2,0-12,2
ca. 38	750-755 = 11,0				350	6,6-6,8	375	3,2-13,8
(2a)	780-790 = 4,9				355-415	= 2,0		
	900 = 0,3-1,7							

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	(6) Rotational-speed limitat. Note: changed to ... rev/min (3)	(3a) Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery Idle (5): rev/min (6)	cm³/1000 strokes (7)	(4a) Idle stop: rev/min (8)	Control rod travel mm (9)
730	96,0 - 98,0	750-755*			100	140 - 160		
	(94,0 - 100,0)				350	6,7 mm RW		
						4,5-4,7mmRW		
						dispersion max.4 (6)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	(4) Lower rated speed: Control-lever deflection in degrees (7)	rev/min (8)	Control rod travel mm (9)	(3) Torque control: rev/min (10)	Control rod travel mm (11)
(2a)								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	(6) Rotational-speed limitat. Note: changed to ... rev/min (3)	(3a) Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery Idle (5): rev/min (6)	cm³/1000 strokes (7)	(4a) Idle stop: rev/min (8)	Control rod travel mm (9)

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,3 o
2. Edition
En

Testoil-ISO 4113

VE 4/10 F 2075 R 112
0 460 404 027
DHK 1 688 901 022
Fuel injection test tubing 6x2x450 mm

Overflow temperature 45° C

supersedes 5.84
company: Peugeot
engine: XD 2 S - USA

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,8-5,2	mm	0,8	
1.2 Supply-pump pressure	1500	5,4-6,0	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1125	45,7-46,7	cm³/1000 strokes	0,8	
Full-load delivery without charge-air pressure	600	38,0-39,0	cm³/1000 strokes	0	2,5 (3,0)
1.4 Idle regulation	390	8,0-12,0	cm³/1000 strokes	0	2,5 (3,5)
1.5 Full-speed regulation	2400	10,5-16,5	cm³/1000 strokes	0,8	
1.6 Start	100	min. 53	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA 0,8 bar	n = rev/min	600	1000	1500	2000
	mm	1,0-1,8(0,7-2,1)	2,7-3,3(2,3-3,7)	(4,3-5,7)	6,8-7,6 (6,5-7,9)
2.2 Supply pump LDA 0,8 bar	n = rev/min	400		2075	
	bar (kgf/cm²)	1,6-2,2		7,6-8,2	
Overflow delivery	n = rev/min	500 (0 bar)		2075 (0,8 bar)	
	cm³/10 s	55-138 (40-153)		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2450	max. 9,0		0,8
	2400		(9,5-17,5)	0,8
	2300	27,0-35,0	(27,0-35,0)	0,8
	2050	46,8-49,2	(45,7-50,3)	0,8
	1400	47,3-49,7	(46,2-50,8)	0,8
	1125		(43,9-48,5)	0,8
	750 *	42,7-43,7	(40,9-45,5)	0,25
	600		(36,2-40,8)	0
switch-off				
Idle stop	450-550	max. 1,0		
	390		(6,0-14,0)	
	680	min. 6.0 at 8.2 mm between idle screw and control lever		
	630	min. 2.0 more than at 680 1/min		
End stop	400	min. 50		
	500	max. 50		
2.4 Solenoid	cut-in voltage	min. 10 V		
		rated voltage 12 V.		

3. Dimensions

Designation	for assembly and adjustment mm
K	3,3
KF	5,7-5,9
MS	0,9-1,1
SVS	2,3
XK	20,2-22,2
XL	8,8-12,1

Observations

Check hydr. cold-start accelerator for operation:
Apply 12 V
500 l/min 2.2-3.4 mm (2.1-3.5)
* LDA stroke = 4.5 mm

K17

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K17

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,30 1
2. Edition
En

Testoil-ISO 4113

VE 4/10 F 2125 R 112-1
0 460 404 028
DHK 1 688 901 022
Fuel injection test tubing 6x2x450 mm

Overflow temperature 45° C

supersedes 5.84
company: Peugeot
engine: XD 2 S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,8 - 5,2	mm	0,8	
1.2 Supply-pump pressure	1500	5,4 - 6,0	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1125	45,7-46,7	cm³/1000 strokes	0,8	2,5 (3,0)
Full-load delivery without charge-air pressure	600	37,3-38,3	cm³/1000 strokes	0	
1.4 Idle regulation	390	8,0-12,0	cm³/1000 strokes	0	2,5 (3,5)
1.5 Full-speed regulation	2450	10,5-16,5	cm³/1000 strokes	0,8	
1.6 Start	100	min: 53,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA 0,8 bar	n = rev/min	600	1000	1500	2000
	mm	1,0-1,8 (0,7-2,1)	2,7-3,3(2,3-3,7)	(4,3-5,7)	6,8-7,6 (6,5-7,9)
2.2 Supply pump LDA 0,8 bar	n = rev/min	400		2075	
	bar (kgf/cm²)	1,6-2,2		7,6-8,2	
Overflow delivery	n = rev/min	500 (0 bar)		2125 (0,8 bar)	
	cm³/10 s	55-138 (40-153)		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2500	max. 9,0	0,8
	2450	(9,5-17,5)	0,8
	2350	26,5-32,5 (25,5-33,5)	0,8
	2050	46,8-49,2 (45,7-50,3)	0,8
	1400	47,3-49,7 (46,2-50,8)	0,8
	1125	(43,9-48,5)	0,8
	*750	42,7-43,7 (40,9-45,5)	0,25
	600	(36,2-40,8)	0
switch-off			
Idle stop	450-550	max. 1,0	
	390	(6,0-14,0)	
	680	min. 6.0 at 8.2 mm between idle screw and control lever	
	630	min. 2.0 more than at 680 1/min	
End stop	400	min. 50	
	500	max. 50	
2.4 Solenoid	cut-in voltage	min. 10 V	
		rated voltage 12 V.	

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,3
KF	5,7-5,9
MS	0,9-1,1
SVS	2,3
K	20,2-22,2
L	8,9-12,2

Observations
Check hydr. cold-start accelerator for operation:
Apply 12 V
500 l/min 2.2-3.4 mm (2.1-3.5)
* LDA stroke = 4.5 mm

1.85

K18

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Test Specifications Fuel Injection Pumps and Governors

① WPP C01/4 OMB 7,4 b 1

3. Edition En

PES 6 A 90 D 410 RS 2502 RQV 250-1300 A B 1071 DL

Komb.-Nr. 0 400 846 442

1 - 5 - 3 - 6 - 2 - 4

0 -60 -120-180-240-300 °±0,5° (±0,75°)

supersedes 5.84
company: OMB
engine: 8360.05.300

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	12,3+0,1	8,4 - 8,5	0,3(0,45			
250	9,9-10,1	2,9 - 3,3	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1350	15,2-17,6	-	-	-	ca.21	100	min.11,5	200	0,4-1,5
							250	9,9-10,1	570	3,2-3,8
									930	5,1-5,5
									1300	7,9
ca.62	11,3	1340-1350								
	4,0	1465-1495								
	1600	0 - 1,0				250-350 (3a)				

Torque control travel a = 0,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1300	84,0 - 85,0 (82,0 - 87,0)	1340-1350 *	800	82,0 - 85,0 (79,5- 87,5)	100	112,0-124,0 (109,0-127,0 = 16,0-16,6 mm RW	1300	12,3+0,1
			500	74,0 - 76,0 (71,5- 78,5)			500	12,5+0,1
							800	12,4+0,2

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

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Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 8,3 k 6

En

1. Edition

PE 6 A 95 D 410 RS 2525 RSV 250-1200 A5C 2199-1 L
Komb.-Nr. 0 400 676 184

supersedes
company DAF
engine DHTD 825

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1 (1,95-2,15) mm (from BDC) RW = 7,5-10,5 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	12,6+0,1	10,9-11,1	0,35 (0,6			
250	6,0-6,2	0,8-1,2	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 21	250	5,6	1000	12,6-12,7
	x = 4,3								400	12,8-12,9
							100	min.19,5	300	13,0-13,5
ca. 55	11,6	1230-1240					250	6,0-6,2		
(2a)	4,0	1325-1355					490-550	=2,0		
	1490	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limit: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 108,5-110,5 (106,5-112,5)	1230-1240*	LDA 600	0 bar 84,5-87,5 (82,0-90,0)	100	125,0-135,0 (122,0-138,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1000 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 A..RS 2525 + A5C 2199-1L	0,7	0,3 0,26 0	12,6-12,7 12,3-12,4 11,7-11,9 11,6-11,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

PES 4 A 90 D 410 RS 2548 RQV 300-1200 AB 1209 L

Komb.-Nr. 9 400 085 245

supersedes-
company: Fiat
engine: 8340.05
74,0 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC) ; cyl. 1; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	12,0+0,1	7,8-7,9	0,3(0,5)			
300	8,1-8,3	0,7-1,1	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 22	100	min.10,0	250	0,6-1,6
							300	8,1-8,3	500	2,6-3,3
ca. 62	11,0	1240-1250					630-680	= 2,0	900	5,4-5,9
	4,0	1375-1405				320-390			1300	8,6
	1500	0-1,0				③a				

Torque control travel a = 0,8 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed ②b limitation intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
1200	77,5-78,5 (75,5-80,5)	1240-1250*	700	74,5-76,5 (72,0-79,0)	100	165,0-175,0	1200	12,0+0,1
							500	12,8+0,1
			500	76,5-78,5 (74,0-81,0)			700	12,3+0,2
							1000	12,0+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

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K22

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 CAS 8,3 d

1. Edition

En

PES 6 A 95 D 420 LS 2551 RSV 375-1100 A0B 2166 R

Komb.-Nr. 9 400 230 048

supersedes

company Case

engine A 504 BD

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,5+0,1	7,6-7,8	0,3(0,45)			
375	7,7-7,9	1,5-2,1	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
			-	-	-	ca. 26	375	7,8	1100	10,5-10,6
									700	11,8-12,1
							100	min.19,0	600	12,2-12,3
							375	7,7-7,9		
ca. 42	9,5	1130-1150					670-730	2,0		
(2a)	4,0	1230-1250								
	2,0	1280								
	~~1350~~	~~0,3-1,7~~								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat Note changed to	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	76,0-78,0 (74,0-80,0)	1130-1150*	700	85,0-91,0 (83,0-93,0)	100	130,0-150 bei RW 17,8 mm	0 -	-
			600	max. 94,0 (max. 98,0)	375	15,0-21,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

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K23

Test Specifications Fuel Injection Pumps and Governors

(1A)

40

WPP 001/4 DAF 6,2 n 3
1. Edition

En

PE 6 A 90 D 320 RS 2577 RSV 250-750 A 7 C 2202 R
Komb.-NR. 0 400 676 179

supersedes –
company DAF
engine DT 615

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
750	11,0+0,1	7,5 - 7,7	0,4 (0,55)			
250	5,9-6,1	0,8 - 1,4	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
			-	-	-	ca. 15	250	6,0	-	-
							100	min.19,5		
ca.40							250	5,9-6,1		
(2a)	10,0	770-780					260-320	= 2,0**		
	4,0	785-805								
	955	0,3-1,4								

** Set idle-speed auxiliary spring at 2 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limital: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
750	75,0 - 77,0 (73,0 - 79,0)	770-780*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

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K24

K24

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 RAB 9,7 b

4. Edition

supersedes 9.84

company RABA

engine D 2356 HM 6 U
162 kW

PES 6 A 95 D 420 LS 2595 RQ 200/1100 AB 1094-1 R

Komb.-Nr. 0 400 846 514

Testoil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,3+0,1	12,1-12,3	0,3(0,6)			
200	6,4-6,6	0,8-1,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550 VH =	19,2-20,8 max. 46°	550	20,0	10,3 4,0	1145-1160 1175-1205	200	6,0	100 200 290-400	min. 8,0 6,4-6,6 330=2,0 max.1,0	1100 500 750 800	11,3-11,4 11,9-12,0 11,8-12,0 11,6-11,9

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation at 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm 7
1100	121,0-123,0 (119,0-125,0)	500	800	119,0-125,0 (116,5-127,5)	100	17,5-18,1
			500	max. 117,0 (max. 119,5)		

Checking values in brackets

10.85

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L1

LA

Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 BAO 13,8 a

3. Edition

En

PE 12 A 90 D 521 RS 2648 RQV 325-1500 AB 1164 R

supersedes 9.84

Komb.-Nr. 0 400 650 002

company: Baudouin

engine: DF 12 AN,S 308 kW

1- 4- 9- 8- 5 - 2 - 11- 10- 3 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

Values apply to fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl ISO 4113

A. Fuel Injection Pump Settings

Start of delivery marking mark cylinder 1 at 24° on the timing device.

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1¹	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	9,6-9,7	6,2-6,3	0,3(0,45			
325	6,0-6,2	1,1-1,7	0,25(0,4			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1500	15,2-17,8	-	-	-	ca. 13	100	min.7,5	300	0,9-1,0
							325	6,0-6,2	700	3,1-3,2
ca. 46	8,6	1540-1550							1100	5,1-5,2
	4,0	1610-1640							1500	8,4
	1700	0-1,0								
						3,5-4,6 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1500	61,5-62,5 (59,5-64,5)	1540-1550*	-	-	100	113,0-123,0 (110,0-126,0 =19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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L2

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 DAO 9,7 a 1

1. Edition

En

PES 6 A 95 D 410 RS 2679
Komb.-Nr. 0 400 846 529

RQ 200/1100 AB 860-1 L

supersedes
company DAEWOO
engine D 2156 MT
169 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05 (1,90-2,10) mm (from BDC) RW = 19,5-21,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,5+0,1	12,7-12,9	0,35(0,6)			
200	5,9-6,1	1,2-1,8	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	9,5	1145-1160	200	6,0	100	min.7,3	1100	10,5-10,6
				4,0	1180-1210			200	5,9-6,1	600	10,7-10,8
VH =	max. 46°							310-350	=2,0	1025	10,6-10,8

Torque-control travel on flyweight assembly dimension a = 0,10 mm

Speed regulation: At 1145-1160

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes/ Control rod travel mm 7
LDA 1100	0,7 bar 127,0-129,0 (125,0-131,0)		LDA 800	0,7 bar 130,5-133,5 (128,0-136,0)	100	179,0-189,0 (176,0-192,0)
			LDA 500	0 bar 81,5-83,5 (79,5-85,5)		

Checking values in brackets

10.85

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L3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PES 6 A..RS 2679 + AB 860-1 L	0,7	0 0,29 0,24	10,8-10,9 8,8-9,0 10,1-10,2 9,2-9,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 LIE 5,6 b

2. Edition

En

PES 4 A 100 D 410 RS 2686 RQV 400-1000 AB 1203 L

Komb.-Nr. 0 400 844 085

supersedes 11.84

company: Liebherr

engine: D 904 T

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,7-2,8 (2,65-2,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,4+0,1	11,9-12,1	0,35(0,6)			
400	5,9-6,1	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1070	15,2-17,8	-	-	-	ca. 11	100	min.7,5	375	1,0-1,1
							400	5,9-6,1	600	3,7-4,0
ca. 62	10,4	1040-1050							1000	7,5-7,6
	4,0	1105-1135							1150	9,9
	1250	0 - 1,0				420-530				
						(3a)				

Torque control travel a = 1,40 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 119,0-121,0 (117,0-123,0)	1040-1050*	LDA 700	0,7 bar 128,5-131,5 (126,0-134,0	100	19,5-21,0 mm RW	1000	11,4+0,1
							500	12,8+0,1
							900	11,7+0,2
			LDA 500	0 bar 87,5-90,5 (85,5-92,5)			700	12,5+0,2

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

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L5

L5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 4 A .. RS 2686 +RQV .. AB 1203 L	0,70	0 0,40 0,33	12,8-12,9 10,4-10,5 11,8-11,9 10,6-10,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 DAF 6,2 p 2
1. Edition
En

PES 6 A 95 D 320 RS 2693 RQ 300/1300 AB 1204 R
Komb.-Nr. 0 400 846 538

supersedes_
company: DAF
engine: DNT 620
130 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC), RW = 7,5-10,5 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,5±0,1	7,6-7,8	0,35(0,6)			
300	6,4-6,5	0,7-1,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
850	19,2-20,8	850	20,0	10,0	1350-1365	300	6,2	100	min.7,2	1290	11,0-11,1
				4,0	1420-1450			300	6,1-6,3	850	12,4-12,6
VH = max. 46°								520-560	=2,0	935	12,1-12,3
										1080	11,3-11,6

Torque-control travel on flyweight assembly dimension a = 0,57 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 850	0,7 bar 76,0-78,0 (74,0-80,0)	-	LDA 1290	0,7 bar 75,5-78,5 (73,0-81,0)	100	135,0-145,0 (132,0-148,0)
					300	7,0-11,0 (4,5-13,5)
			LDA 600	0 bar 65,0-67,0 (63,0-69,0)		

Checking values in brackets

10.85

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L7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS 2693 AB 1204 R	0,7	0 0,25	11,5-11,6 11,2-11,4 11,4-11,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 6,2 o 2
1. Edition
En

PES 6 A 95 D 320 RS 2693 RSV 300-1300 A 0 C 2206 R
Komb.-Nr. 0 400 876 332

supersedes -
company DAF
engine DNT D 620

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 7,5 - 10,5 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	10,8+0,1	6,4 - 6,6	0,35 (0,6)			
300	6,1-6,3	0,6 - 1,2	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 28	300	5,7	1290	10,2-10,4
	X = 5,5						100	min. 19,5	500	10,8-10,9
ca.57	9,2	1340-1350					300	6,1-6,3	1005	10,5-10,7
(2a)	4,0	1430-1460					600 - 660=2,0			
	1570	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min „ 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
850	64,0 - 66,0 (62,0 - 68,0)		1290	69,0 - 71,0 (66,5 - 73,5)	100	125,0-135,0 (122,0-138,0)	-	-
					300	6,0-12,0 (3,5-14,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

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L9

Test Specifications Fuel Injection Pumps and Governors

PES 6 A 95 D 320 RS 2693 Z RQ 300/1300 AB 1204 R

Komb.-Nr. 0 400 846 537

supersedes -
company DAF
engine DNS 620
150 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 7,5-10,5 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,4+0,1	9,0-9,2	0,35(0,6)			
300	6,4-6,6	0,7-1,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider		Full load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	rev/min 5	Control rod travel mm 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
820	19,2-20,8	820	20,0	10,6	1343-1358	300	6,2	100	min.7,3	1290	11,7-11,9
VH =	max. 46°			4,0	1425-1450			300	6,1-6,3	850	13,1-13,3
								520-560	=2,0	965	12,7-12,9
										1060	12,3-12,5

Torque control travel on flyweight assembly dimension a 0,57 mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/100 strokes 7
LDA 850	0,7 bar 90,0-92,0 (88,0-94,0)	-	LDA 1290	0,7 bar 87,0-90,0 (84,5-92,5)	100	135,0-145,0 (132,0-148,0)
			LDA 600	0 bar 65,0-67,0 (63,0-69,0)	300	7,0-11,0 (4,5-13,5)

Checking values in brackets

10.85

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 A..RS 2693 Z + AB 1204 R	0,7	0 0,31 0,25	12,4-12,5 11,2-11,4 12,1-12,2 11,2-11,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 6,2 o 1

1. Edition

En

PES 6 A 95 D 320 RS 2693 Z
Komb.-Nr. 0 400 876 333

RSV 300-1300 A0C 2195 R

supersedes
company DAF
engine DNT 620

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1 (1,95-2,15) mm (from BDC) RW = 7,5-10,5 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
850	12,4+0,1	9,0-9,2	0,35 (0,6)			
300	6,1-6,3	0,6-1,2	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7				ca. 28	300	5,7	1290	11,6-11,8
	x =	5,8							500	12,4-12,5
							100	min.19,5	1040	12,0-12,2
ca. 59	10,6	1340-1350					300	6,1-6,3		
(2a)	4,0	1425-1455					575-635	2,0		
	1595	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 90,0-92,0 (88,0-94,0)		LDA 1290	0,7 bar 85,0-87,0 (82,5-89,5)	100	125,0-135,0 (122,0-138,0)		
			LDA 600	0 bar 65,0-67,0 (63,0-69,0)	300	6,0-12,0 (3,5-14,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

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L12

D. Adjustment Test for Manifold Pressure Compensator DAF 6,2 o 1

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
PES 6 A..RS 2693 Z + AOC 2195 R	0,7	0 0,31 0,25	12,4-12,5 11,1-11,2 12,1-12,2 11,5-11,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

PES 6 MW 100/320 RS 1119
RQV 300-1400 MW 57
0 403 446 152

supersedes -
company: Volvo
engine: TD 61-3012
132 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,6+0,1	9,0-9,2	0,35(0,6)			
300	6,5-6,8	1,2-1,6	0,35(0,5)			
1000	10,3+0,1					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1480 1725	15,2-17,8 0,1-1,0				ca. 16 ③a	300 100	6,5-6,6 min.8,1		
ca. 62	10,6 4,0	1440-1450 1595-1625								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed ②b limitation intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 90,0-92,0 (88,0-94,0)	1440-1450*	LDA 1000	0 bar 75,0-77,0 (73,0-79,0)	100 300	140-160 (137-163) 12,0-16,0 (9,5-18,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

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L14

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 550 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1119 with MW 57	0,22	0,33 0 0,70	10,5-10,6 11,2-11,5 10,3-10,4 11,6-11,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Testoil-ISO 4113

PES 6 MW 100/320 RS 1119-1
RQV 300-1400 MW 57-1
0 403 446 153

supersedes -
company: Volvo
engine: TD 61.3012
150 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) 9,0-12,0 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0+0,1	10,5-10,7	0,35 (0,6)			
300	6,0-6,1	1,2-1,6	0,35 (0,55)			
1000	10,1+0,1		0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1480 1700	15,2-17,8 0-1,0				ca. 13 (3a)	300 100	6,0-6,1 min. 7,6		
ca. 61	11,0 4,0	1440-1450 1590-1620								

Torque control travel a = ° mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 105,0-107,0 (103,0-109,0)	1440-1450*	LDA 1000	0 bar 75,0-77,0 (73,0-79,0)	100 300	140,0-160,0 (137,0-163,0) 12,0-16,0 (9,5-18,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

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L16

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 550 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1119-1 with RQV..MW 57-1	0,16	0,33 0 0,70	10,5-10,6 11,7-12,0 10,1-10,2 12,0-12,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL G,1 f
1. Edition
En

Testnil-ISO 4113

PES 6 MW 100/320 RS 1119
RQV 300-1400 MW 58
0 403 446 151

supersedes -
company: Volvo
engine: TD 61.3012
113 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,4+0,1	8,0-8,2	0,35(0,6)			
300	6,1-6,2	1,2-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1480 1680	15,2-17,8 0-1,0				ca. 13 (3a)	300 100	6,1-6,2 min.7,8		
ca. 60	9,4 4,0	1440-1450 1565-1595								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	80,0-82,0 (78,0-84,0)	1440-1450*			100 300	19-21 mm RW 140,0-160,0 (137 -163) 12,0-16,0 (9,5-18,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

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(1A)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 40,5c1
3. Edition
En

Testoil-ISO 4113

PE 8 P 120 A 920/5 RS 293 RSUV 300-750 P 9 A 350
Komb.-Nr. 0 401 878 105
1 - 6 - 4 - 5 - 8 - 3 - 2 - 7
0 -75 -90 -120-210-225-315-345- ± 0,50(0,75)

supersedes 8.80
company:
engine: KHD BA 16 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC) Port closing mark cyl.1

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	10,8+0,1	16,5-16,9 (16,2-17,2)	0,5(0,9)			
300	6,3-6,5	2,2 - 2,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.26	300	5,9	750	10,8-10,9
	X =	4,0					300	6,3-6,5	400	10,8-10,9
(5) ca.61	790-800	=9,8					335-395	=2,0	325	11,7-12,3
	810-840	=4,0								
	975	=0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
Test value on request		790-800*	-	-	100	19,5-21,0 mm RW	300	6,4

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.85

L15

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Test Specifications Fuel Injection Pumps ② and Governors

PE 6 P 120 A 320 RS 415-1 RQ 250/1000 PA 417-4
Komb.-Nr. 0 401 846 511
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company: DAF
engine: DKZ 1160

Tescil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,5+0,1	20,6-20,8	0,5(0,9)			
250	6,7-6,9	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	11,5 4,0 1250	1035-1050 1090-1120 0-1,0	250	6,5	100 250 445-485	min.7,4 6,4-6,6 =2,0	850 990	12,7-12,8 12,6-12,8

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1035-1050 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 850	0,7 bar 206,0-208,0 (203,0-211,0)	-	LDA 600	0 bar 140,0-142,0 (137,0-145,0)	100	305,0-345,0 (305,0-345,0)

Checking values in brackets

10.85

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L20

D. Adjustment Test for Manifold Pressure Compensator DAF 11,6 y 2

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 415-1 + RQ..PA 417-4	0,7	0 0,34 0,28	12,5-12,6 10,3-10,5 11,8-11,9 10,6-11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

PE 6 P 120 A 320 RS 415-1 RQ 250/900 PA 754
Komb.-Nr. 0 401 846 510
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes-
company: DAF
engine: DKX 1160 E

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
875	11,0+0,1	17,1-17,3	0,5(0,9)			
250	6,7-6,9	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider ① PRG check Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
850	14,1-14,9	850	14,5	10,0 4,0 1150	925-940 995-1025 0-1,0	250	6,5	100 250 445-485	min.7,4 6,4-6,6 =2,0	875 600 735 775	11,0-11,1 11,8-11,9 11,4-11,6 11,2-11,4

Torque-control travel on flyweight assembly dimension a = 0,50 mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes/ mm 7
LDA 875	0,7 bar 171,0-173,0 (168,0-176,0)	-	LDA 600 LDA 600	0,7 bar 172,0-178,0 (169,0-181,0) 0 bar 140,0-142,0 (137,0-145,0)	100	305,0-345,0 (301,0-349,0)

Checking values in brackets

10.85

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L22

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P..RS 415-1 with RQ..PA 754	0,7	0 0,30 0,25	11,6-11,7 10,3-10,5 11,1-11,2 10,4-10,7

Notes

(1) when n = rev/min and gauge pressure bar (= maximum full-load control rod travel)

Testoil-ISO 4113